

INITIAL REVIEW DRAFT 5/16/2007

ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW
INITIAL REGULATORY FLEXIBILITY ANALYSIS
For a Regulatory Amendment to Revise the Maximum Retainable Amounts
Of Groundfish in the Arrowtooth Flounder Fishery

Implemented Under the Authority of the
Fishery Management Plan
for the
Groundfish Fishery of the Gulf of Alaska

May 2007

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Abstract: This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) evaluates the environmental impacts, costs and benefits, and small entity impacts of a proposed regulatory amendment. The proposed amendment would revise the maximum retainable amounts (MRAs) of groundfish in the arrowtooth flounder fishery in the Gulf of Alaska (GOA). The purpose of the proposed amendment is to reduce the amount of regulatory discards of otherwise marketable groundfish in the developing arrowtooth flounder fishery. This EA/RIR/IRFA addresses the requirements of the National Environmental Policy Act, Presidential Executive Order 12866, and the Regulatory Flexibility Act.

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Executive Summary

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) evaluates the environmental impacts, costs and benefits, and small entity impacts of a proposed regulatory amendment. The proposed amendment would revise the maximum retainable amounts (MRAs) of groundfish in the arrowtooth flounder fishery in the Gulf of Alaska (GOA). The purpose of the proposed amendment is to reduce the amount of regulatory discards of otherwise marketable groundfish in the developing arrowtooth flounder fishery. This EA/RIR/IRFA addresses the requirements of the National Environmental Policy Act, Presidential Executive Order 12866, and the Regulatory Flexibility Act.

In October 2006 the North Pacific Fishery Management Council (Council) received a proposal from industry to revise the MRAs of groundfish in the arrowtooth flounder fishery in the GOA. The problem statement made by the industry may be summarized as follows:

When the MRAs for the directed GOA arrowtooth flounder fishery were set in regulations in 1994, the Council chose to set incidental catch allowances at zero for a wide group of species to prevent vessels from using arrowtooth flounder as a basis species for retention since there was no market for arrowtooth flounder. Arrowtooth flounder is now a viable target fishery and efforts to improve retention of many groundfish species utilized by the trawl sectors are restrained by MRAs in the directed GOA arrowtooth flounder fishery. MRAs are a widely used groundfish management tool to reduce targeting on a species and slow harvest rates as an allocation approach. However, sometimes species managed with MRAs must be discarded, even though economic incentives exist to retain that species. Thus, the MRA forces regulatory discards of some species that might otherwise be retained without undermining the intent of the MRA as a tool to reduce overall harvest rates. This regulatory amendment would evaluate raising the MRAs for some species in the directed GOA arrowtooth flounder fishery to provide increased opportunity for retention of species harvested by the trawl sectors and reduce overall discards in this sector, while not subjecting incidentally caught species to increased allocation concerns.

Table 1 lists these MRAs for incidental catch species relative to arrowtooth flounder as a basis species under each alternative for comparison. Note that the basis species under each alternative is arrowtooth flounder and that the MRA percentages for each incidentally catch species are found in the columns.

None of the alternatives under consideration would alter the existing MRAs in the arrowtooth flounder fishery for pollock, Pacific cod, the “other species” category (squid, octopus, sharks, and sculpins), or forage fish.

Alternative 1, the no action or status quo alternative, would leave the MRAs for groundfish in the arrowtooth fishery unchanged from those in current regulations.

Alternative 2 would set the MRAs for incidental catch species relative to arrowtooth flounder as a basis species as per the industry proposal.

Alternative 3 would set the MRAs for incidental catch species relative to arrowtooth flounder as a basis species near recent high catch levels in the arrowtooth flounder target.

The action area effectively covers the entire GOA. The alternatives concern only the distribution of the MRAs between the arrowtooth flounder fishery and other groundfish fisheries. None of the alternatives under consideration affect the arrowtooth flounder stock or any other components of physical or biological environment. Under the proposed action, the MRAs for groundfish in the arrowtooth flounder fishery would be raised from current levels and greater amounts of groundfish closed to directed fishing could be retained in the arrowtooth flounder fishery. However, even though the amounts of groundfish retained in the arrowtooth flounder fishery would increase, total removal of the each species would still be within the TAC levels for each species. The effect of the arrowtooth flounder fishery on groundfish species is limited primarily by the TAC established for arrowtooth flounder and the MRA species, and by the amount of the halibut prohibited species catch (PSC) allowed in the trawl fisheries. However, the total harvest of groundfish would still be limited by the TACs established for them through the harvest specifications process. The impacts of the harvest strategies and resulting TAC amounts were analyzed in the Alaska Harvest Specifications Environmental Impact Statement (NMFS 2007a). This proposed action would have no additional impacts on the GOA environment beyond those analyzed in the EIS.

The current directed fishery for arrowtooth flounder is described in more detail in Section 5.4 of this document. In the GOA the arrowtooth flounder fishery is almost exclusively prosecuted by catcher vessels (CVs) and catcher processing vessels (CPs) using bottom trawl gear. Although the arrowtooth flounder fishery is open to other vessel categories and gear types, very small amounts of arrowtooth flounder are harvested by other gear types and then only as incidental catch. In recent years CVs participating in the arrowtooth flounder fishery generally fish for Pacific cod and pollock during the roe season. Following the seasonal closure of these fisheries, vessels target arrowtooth flounder until the second seasonal halibut bycatch cap for the deep-water complex is reached (usually in May). The CPs participating in the arrowtooth flounder fishery enter the fishery following the closure of rock sole and yellowfin sole in the Bering Sea. Most of the harvest of arrowtooth flounder occurs from March through May. Depending upon the availability of the halibut PSC allowance for the deep-water complex vessels may also target arrowtooth flounder in October and November. After the arrowtooth flounder fishery closes, these vessels generally shift to several different targets; notably flatfish species in the shallow-water complex, rockfish, pollock, and Pacific cod as the seasonal allowances of these targets become available. The implementation of the Rockfish Pilot Program in the Central GOA in 2007 may result shifts in effort and timing of the arrowtooth flounder fishery.

Given the general trend in the price for arrowtooth flounder, increasing the MRAs for incidentally caught species could provide enough of an economic incentive for the some trawl vessels to target arrowtooth flounder more often. Under Alternative 1, those groundfish species with an MRA set at zero that are closed to directed fishing must be discarded, regardless of the value of the species. Under Alternatives 2 and 3, high valued bycatch species that are closed to directed fishing could be retained up to the MRA, thus potentially increasing the vessel's net revenue while targeting arrowtooth flounder. In those cases were a vessel is on the margin for targeting arrowtooth flounder under Alternative 1, increasing the MRAs for arrowtooth flounder under Alternatives 2 and 3 could be enough of economic incentive to induce entry into the arrowtooth flounder target fishery.

Increasing the MRAs for the directed arrowtooth flounder fishery under Alternatives 2 and 3 would likely increase the demand for halibut PSC that is apportioned to the deep-water species complex. Given that halibut PSC is not apportioned between trawl sectors, the pace of fishing could increase as trawl vessels race to harvest more of the species in the deep-water complex fisheries before halibut PSC is fully utilized.

Both Alternatives 2 and 3 would allow vessels to retain a greater amount of groundfish using arrowtooth flounder as a basis species. This could lead to a reduction in regulatory discards of otherwise marketable groundfish and provide an incentive for vessels to target arrowtooth flounder more often. This Environmental Assessment finds that all of the alternatives considered would have no impacts on stocks of groundfish. Alternatives 2 and 3 would raise the MRA for Atka mackerel, an important prey species for Steller sea lions (SSL) during the summer months in the Western GOA. Because there would be a possibility of localized depletion within SSL critical habitat further analysis may be warranted should topping off on Atka mackerel occur in the arrowtooth flounder fishery.

An Initial Regulatory Flexibility Analysis (IRFA) was prepared to evaluate the impacts on small entities of the alternatives for revising the MRAs for groundfish in the GOA using arrowtooth flounder as a basis species. At this time, data on the number of trawl vessels that caught and processed less than \$4.0 million ex-vessel value or product value of directed GOA arrowtooth flounder could not be generated in time for initial review. This information and other information necessary to complete the IRFA will be generated and included in the public review draft that is scheduled for review in October 2007.

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Environmental Assessment

1 Introduction

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) evaluates the environmental impacts, costs and benefits, and small entity impacts of a proposed regulatory amendment. The proposed amendment would revise the maximum retainable amounts (MRAs) of groundfish in the arrowtooth flounder fishery in the Gulf of Alaska (GOA). The purpose of the proposed amendment is to reduce the amount of regulatory discards of otherwise marketable groundfish in the developing arrowtooth flounder fishery. This EA/RIR/IRFA addresses the requirements of the National Environmental Policy Act, Presidential Executive Order 12866, and the Regulatory Flexibility Act.

The National Environmental Policy Act (NEPA) requires an assessment of the biological, social, and economic consequences of fisheries management alternatives. It provides the members of the public an opportunity to be involved in and influence decision-making on Federal actions.

This EA analyzes the effects of potential revisions to the MRAs for groundfish in the arrowtooth flounder fishery in the GOA. The action area effectively covers the entire Gulf of Alaska. The affected human environment includes the natural and physical environment as well as relevant economic and social conditions.

1.1 Purpose and Need

The proposed action would change the MRAs for groundfish in the arrowtooth flounder fishery in the GOA. The purpose of the proposed action is to provide the opportunity to the arrowtooth flounder trawl fishing industry to retain more groundfish and is intended to increase the industry's opportunity to reduce discards.

In 1997 the Council set most of the groundfish MRAs at zero relative to retained amounts of arrowtooth flounder to prevent vessels from using arrowtooth flounder as a basis species for retention. At that time, there were concerns that fishing vessel operators would target arrowtooth flounder to increase the retainable amounts of valuable species closed to directed fishing and increase bycatch amounts of Pacific halibut. Increased halibut bycatch rates could result reaching halibut bycatch limits before the TACs established for other trawl target fisheries were harvested.

Since 1997, markets for arrowtooth flounder have been developed and this species now supports a viable target fishery. As a result, representatives for the GOA trawl industry now support changing the MRAs for GOA groundfish to expand the use of arrowtooth flounder as a basis species for the retention of groundfish closed to directed fishing. Products made from arrowtooth flounder now include whole fish, surimi, headed and gutted (both with and without the tail on), fillets, frills (fleshy fins used for sashimi and soup stock), bait, and meal.

In October 2006 the Council received a proposal from industry to revise the MRAs of groundfish in the arrowtooth flounder fishery in the GOA. The problem statement made by the industry may be summarized as follows:

When the MRAs for the directed GOA arrowtooth flounder fishery were set in regulations in 1994, the Council chose to set incidental catch allowances at zero for a wide group of species to prevent vessels from using arrowtooth flounder as a basis species for retention since there was no market for arrowtooth flounder. Arrowtooth flounder is now a viable target fishery and efforts to improve retention of many groundfish species utilized by the trawl sectors are restrained by MRAs in the directed GOA arrowtooth flounder fishery. MRAs are a widely used groundfish management tool to reduce targeting on a species and slow harvest rates as an allocation approach. However, sometimes species managed with MRAs must be discarded, even though economic incentives exist to retain that species. Thus, the MRA forces regulatory discards of some species that might otherwise be retained without undermining the intent of the MRA as a tool to reduce overall harvest rates. This regulatory amendment would evaluate raising the MRAs for some species in the directed GOA arrowtooth flounder fishery to provide increased opportunity for retention of species harvested by the trawl sectors and reduce overall discards in this sector, while not subjecting incidentally caught species to increased allocation concerns.

1.2 Scope of this Environmental Assessment

The Council on Environmental Quality (CEQ) regulations encourages agencies preparing NEPA documents to eliminate repetition as described in the following statement:

Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared on an action included within the entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement and incorporate discussions from the broader statement by reference and shall concentrate on the issues specific to the subsequent action. (40 CFR 1502.20)

This process of referencing existing NEPA documents is referred to as “tiering.” In 40 CFR 1508.28, the CEQ regulations further define tiering as the coverage of general matter in broader environmental impact statements with subsequent narrower statements of environmental analyses incorporating by reference the general discussion and concentrating solely on the issues specific to the statement subsequently prepared. The CEQ regulations further note that tiering is appropriate when the sequence of statements or analysis is from a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis.

This EA relies heavily on the information and analysis contained in the Alaska Groundfish Harvest Specifications Final Environmental Impact Statement (NMFS 2007a, hereafter referred to as “Groundfish EIS”), available on the NMFS Alaska Region web site at <http://www.fakr.noaa.gov>. This EA often refers to the Groundfish EIS to focus the analysis on the current issues and eliminate repetitive discussions. The Groundfish EIS describes the status of the environment and analyzes the impacts of the groundfish fisheries harvest strategies and resulting total allowable catch (TAC) levels on the human environment.

This EA also relies heavily on the information and analysis contained in the Council's annual Stock Assessment and Fishery Evaluation (SAFE) Report for the Groundfish Resources of the Bering Sea/Aleutian Islands Region (NPFMC 2006), available from the Council web site at <http://www.fakr.noaa.gov/npfmc/SAFE/>. The SAFE Reports contain the status of the groundfish stocks, the results of the NMFS EBS trawl survey, the annual management fisheries report, stocks assessments, and an economic report.

This proposed action would change the MRA allowances of groundfish using arrowtooth flounder as a basis for retention. This EA details the specific impacts of the proposed action.

2 Description of Alternatives

The alternatives establish MRAs for incidental catch species relative to arrowtooth flounder as a basis species over a range of values. Alternative 1 (status quo) has the lowest MRA percentages; Alternative 2 has the highest, and the Alternative 3 percentages are intermediate. The MRAs for each incidental catch species relative to arrowtooth flounder as a basis species within each alternative are compared in Table 1. Note that the basis species under each alternative is arrowtooth flounder and that the MRA percentages for each incidentally catch species are found in the columns.

Alternative 1, the no action or status quo alternative, would leave the MRAs for groundfish in the arrowtooth flounder fishery unchanged from those in current regulations.

Alternative 2 would set the MRAs for incidental catch species relative to arrowtooth flounder as a basis species as per the industry proposal.

Alternative 3 would set the MRAs for incidental catch species relative to arrowtooth flounder as a basis species near recent high catch levels in the arrowtooth flounder target.

None of the alternatives under consideration would alter the existing MRAs in the arrowtooth flounder fishery for pollock, Pacific cod, the "other species" category (squid, octopus, sharks, and sculpins), or forage fish.

2.1 Alternative 1: Status Quo (No Action)

Under this alternative the MRAs of incidental catch of groundfish relative to arrowtooth flounder as a basis species are unchanged. These amounts are listed under Alternative 1 in Table 1 and in Table 10 to 50 CFR part 679 (Appendix 1). This is the No Action or status quo alternative. Under this alternative only pollock, Pacific cod, species in the "other species" complex (squid, shark, octopus, and sculpins), and forage fish may be retained relative to arrowtooth flounder as a basis species. All other incidental species must be discarded relative to retained arrowtooth flounder.

Retention of incidental species relative to arrowtooth flounder is highly restricted compared to other groundfish species (see Appendix 1). The MRA for incidental species relative to

arrowtooth flounder as a basis species was changed in 1994 (59 FR 18229; July 27, 1994) and again in 1997 (62 FR 11109; March 11, 1997). At the time of these changes, concerns centered on fishing vessel operators targeting arrowtooth flounder to increase retainable amounts of valuable species closed to directed fishing (topping off) and thereby increase bycatch amounts of Pacific halibut. Increased halibut bycatch rates could result reaching halibut bycatch limits before the TACs established for other trawl target fisheries were harvested. Recently the value of arrowtooth flounder has increased and the species has developed into a legitimate target.

Many incidental species assigned an MRA of zero are caught in conjunction with arrowtooth flounder when the incidental species are open to directed fishing. Under those conditions retention of the incidental species is not restricted. Retention of incidental species is restricted when the fishery is closed to directed fishing due to TAC considerations (e.g., skates and forage fish are closed all year to directed fishing) or when limited by a trawl halibut mortality closure.

2.2 Alternative 2: Set MRAs as per Industry Proposal

Under this alternative MRAs for incidental catch of groundfish relative to arrowtooth flounder as a basis species would be established at the levels proposed by industry. The intent of the proposal is to reduce regulatory discards and increase utilization of marketable fish. The proposal will also reduce violations of the MRA restrictions incurred when vessels are unable to completely discard incidentally caught species that are currently restricted to zero retention. Compared to Alternative 1 the MRAs for pollock, Pacific cod, “other species,” and forage fish are unchanged. The MRAs for the remaining incidentally taken species are increased from zero. The MRAs for sablefish and rockfish are raised from zero to 1 percent and 5 percent, respectively. The MRAs for flatfish species, skates, and Atka mackerel are increased from 0 to 20 percent.

Because pollock and Pacific cod are fully utilized in directed fisheries and are forage species for the endangered Steller sea lion, the industry’s proposal specifically did not wish incidental catch to increase through potential topping off. The increases proposed for rockfish and sablefish approximate estimated incidental catch rates (Tables 3 through 6) and are proposed to reduce regulatory discards of marketable fish without providing an incentive to top off.

The proposed MRAs for deep-water flatfish, rex sole, flathead sole, shallow-water flatfish, skates, and Atka mackerel are greater under Alternative 2 than under Alternatives 1 and 3 (Table 1) and would increase from 0 to 20 percent. Allowing retention of these species may increase catch to some degree, but will primarily reduce discards.

Skates, Atka mackerel, and sablefish (in the trawl fisheries) are closed to directed fishing throughout the year to prevent exceeding the TACs and in the case of Atka mackerel to provide greater prey availability for Stellar sea lions. Atka mackerel is proposed at 20 percent so that the MRA is consistent with most other incidental catch species. Skates are raised from zero because they are currently discarded as an incidental species relative to arrowtooth flounder. Sablefish are established at 1 percent to allow retention of incidental catch of this highly valuable species but to discourage potential topping off. An increase of the MRA for sablefish as an incidental species

beyond 1 percent could interfere, for example, with allocations made under the GOA Rockfish Pilot Program.

The aggregated rockfish MRA is established at relatively low level to accommodate the limited amount of incidental catch and to discourage topping off. Rockfish in the Central GOA are regulated under the Rockfish Pilot Program.

2.3 Alternative 3: Set MRAs near Recent High Incidental Catch Levels

Under Alternative 3 MRAs for incidental catch relative to arrowtooth flounder as a basis species would be set near recent highest annual incidental catch rates of species landed in conjunction with arrowtooth flounder. Data from NMFS' Catch Accounting System (CAS) from 2003 through 2006 in Tables 3 through 6 show rates of catch when arrowtooth flounder is calculated as the target.

Under Alternative 3, the MRAs are unchanged from Alternatives 1 and 2 for pollock, Pacific cod, other species, and forage fish to respond to concerns expressed in the industry proposal. The rates for deep-water flatfish, rex sole, flathead sole and shallow-water flatfish were derived from Tables 3 through 6. The highest rate for an individual species or species group across the years was identified and the rounded up to the nearest 5 percent. Rounding up the amount provided for potential higher catches and simplifies Table 1.

Compared to Alternative 1 the MRAs in Alternative 3 are set higher for deep-water flatfish, rex sole, flathead sole, shallow-water flatfish, sablefish, rockfish, Atka mackerel, and skates. Compared to Alternative 2, Alternative 3 MRAs are unchanged for rockfish and sablefish and would be lower for deep-water flatfish, rex sole, flathead sole, shallow-water flatfish, Atka mackerel, and skates.

The intent of this alternative is to 1) reduce regulatory discards and improve the utilization of groundfish incidentally taken in the arrowtooth flounder directed fishery, 2) prevent an increase in groundfish catch in the arrowtooth flounder fishery substantially beyond recent incidental catch levels, and 3) continue to keep MRAs for important Stellar sea lion prey species (pollock, Pacific cod, and Atka mackerel) at low levels.

2.4 Alternatives Considered but not Carried Forward

Two additional alternatives were considered but not carried forward for further analysis in this EA. One alternative would have set the MRAs for incidental groundfish caught in the arrowtooth flounder directed fishery at levels equal to the MRAs established for incidental species caught in other basis species targets in the deep-water complex (deep-water flatfish, rex sole, sablefish, and rockfish) (See Appendix 1). This alternative was considered initially as an upper limit.

This alternative was not considered further as the pollock, Pacific cod, sablefish, and rockfish fisheries are fully developed fisheries. These species are predominately caught in directed fisheries. To a large extent, while trawl sablefish is not opened as a directed fishery, it is an

acknowledged top off fishery and a significant portion of TAC is allocated to the trawl sablefish fishery. If this alternative were implemented the MRAs would revert back to those levels used prior to 1994. An increase in the MRAs for pollock, Pacific cod, sablefish, and rockfish could encourage topping off using arrowtooth flounder as a basis for retention of groundfish of greater value. This alternative would have allowed potential increased catch through topping off fishing for pollock, Pacific cod, and Atka mackerel in areas where catch of these species are limited as part of measures developed to protect the endangered Steller sea lion (SSL). This has the potential to increase the harvest of important SSL prey species in critical habitat resulting in some localized depletion of these prey species. For these reasons the analysis of this alternative was not carried forward.

The second alternative would have set MRAs at levels equal to recent average (2003 through 2006) catch in the arrowtooth flounder fishery (Tables 3 through 6). This alternative was not developed further because by setting MRAs at average levels regulatory discards would still be required on occasion. The proposal would have raised the MRA for Pacific cod above the current and industry proposed level and prevented the retention of any Atka mackerel in the arrowtooth flounder fishery.

3 Affected Environment

This chapter describes the human environment, including the physical environment, habitat, groundfish life history, marine mammals, seabirds, crab fisheries, a management history, the harvesting sector, the processing sector, and community and social conditions. The detailed background information provided in the documents described below are incorporated by reference. In addition to the factors discussed in the Groundfish EIS, this action specifically concerns the management of the MRAs in arrowtooth flounder fishery. A description of the arrowtooth flounder fishery, along with a description of current MRA management, is included here.

3.1 Gulf of Alaska Environment

The action area includes the entire Gulf of Alaska. The documents listed below contain extensive information about the fishery management areas, fisheries, marine resources, ecosystem, social, and economic elements of the GOA groundfish fisheries. Rather than duplicate an affected environment description here, readers are referred to these documents. This list is a partial listing of NEPA documents that have been prepared for GOA fishery management measures. Internet links to these documents, as well as a comprehensive list of NEPA documents that have been prepared by NMFS, Alaska Region and the Council are at <http://www.fakr.noaa.gov/index/analyses/analyses.asp>. Any additional information beyond what is included in the following references is contained in the section addressing each particular resource component in Section 4.

Alaska Groundfish Harvest Specifications Final Environmental Impact Statement (NMFS 2007a). This EIS provides decision makers and the public with an evaluation of the environmental, social, and economic effects of alternative harvest strategies for the federally managed groundfish fisheries in the Gulf of Alaska and the Bering Sea and Aleutian Islands

management areas. The EIS examines alternative harvest strategies that comply with Federal regulations, the GOA FMP, and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). These strategies are applied to the best available scientific information to derive the total allowable catch estimates for the groundfish fisheries. The EIS evaluates the effects of different alternatives on target species, non-specified species, forage species, prohibited species, marine mammals, seabirds, essential fish habitat, ecosystem relationships, and economic aspects of the GOA fisheries.

Stock Assessment and Fishery Evaluation (SAFE) Report for the Groundfish Resources of the Gulf of Alaska (NPFMC 2006). Annual SAFE reports contain a review of the latest scientific analyses and estimates of each GOA species' biomass and other biological parameters. This includes the acceptable biological catch specifications used by NMFS in the annual harvest specifications. The SAFE report also includes summaries of the available information on the GOA ecosystem and the economic condition of the groundfish fisheries off Alaska. This document is available from <http://www.afsc.noaa.gov/refm/stocks/assessments.htm>.

Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement (Final PSEIS, NMFS 2004). A Final PSEIS was prepared to evaluate the fishery management policies embedded in the BSAI and GOA groundfish FMPs against policy-level alternatives. NMFS issued a Record of Decision for the Final PSEIS on August 26, 2004, effectively implementing a new management policy that is ecosystem-based and more precautionary when faced with scientific uncertainty. The PSEIS serves as the primary environmental document for subsequent analyses of environmental impacts on the groundfish fisheries. For more information, see the Final PSEIS and related documents at <http://www.fakr.noaa.gov/sustainablefisheries/seis/default.htm>.

Chapter 3 of the Final PSEIS establishes an environmental baseline, which is a description of the existing conditions that serve as the starting point for the document's analyses. This chapter provides a detailed description of the affected environment, including extensive information on fishery management areas, marine resources, and marine habitat in the North Pacific Ocean. The description of baseline environmental conditions was developed using the best available scientific information, which at the time that the Final PSEIS was drafted incorporated data up to 2002. This EA uses the Groundfish EIS as a baseline.

3.2 MRA Regulations and Management Function in GOA Groundfish Fisheries

MRA regulations establish the calculation method and MRAs for groundfish species that are closed to directed fishing. The MRA is calculated as a percentage of the retained amount of species closed to directed fishing relative to the retained amount of basis species or species groups open for directed fishing. All MRA accounting is computed based upon processed product that is converted to round weight. Appendix 1 lists retainable percentages for GOA incidental groundfish species used to calculate an MRA. Amounts that are caught in excess of the MRA percentage must be discarded. Current regulations limit vessels to MRAs at any time during a fishing trip.

50 CFR part 679.2 defines a fishing trip as follows:

- (i) With respect to retention requirements of MRA, an operator of a catcher/processor or mothership processor vessel is engaged in a fishing trip from the time the harvesting, receiving, or processing of groundfish is begun or resumed in an area until
 - (A) The effective date of a notification prohibiting directed fishing in the same area under § 679.20 or § 679.21;
 - (B) The offload or transfer of all fish or fish product from that vessel;
 - (C) The vessel enters or leaves an area where a different directed fishing prohibition applies;
 - (D) The vessel begins fishing with different type of authorized fishing gear; or
 - (E) The end of a weekly reporting period, whichever comes first.

MRAs are the primary tool NMFS uses to regulate the catch of species closed to directed fishing. The MRA table is a matrix of proportions representing a range of rates of expected or accepted incidental catch of species closed to directed fishing relative to target species. As a management tool, MRAs rely on the ability of the vessel operator to selectively catch the target species. The target species is called a basis species in regulation. The species closed to directed fishing is the incidental species. The MRA percentages are intended to slow the rate of harvest of a species when insufficient TAC or PSC amounts are available to support a directed fishery.

NMFS prohibits directed fishing for a species to avoid reaching a TAC (typically established for conservation reasons), reaching an amount or percentage of groundfish included in the annual specifications for a gear and species or species group, or for a prohibited species limit (e.g., halibut limits). When NMFS prohibits directed fishing, retention is allowed up to an amount calculated with the MRA. The MRA table (Table 10 to 50 CFR part 679 and Appendix 1 of this document), shows retainable proportions of incidental species relative to species open to directed fishing. Vessel operators calculate the MRA through three basic steps. First, they identify and calculate the round weight of the basis (or target) species onboard. Next, they identify the appropriate fraction from the MRA table, and then multiply that rate against the round weight of the basis species. The calculated maximum amount limits retention of the incidental species. A vessel will typically discard catch of the incidental species in excess of that amount to avoid violation of current regulation. The catcher/processor vessel operator calculates the MRA at any time for the duration of the fishing trip, often referred to as an “instantaneous” calculation. The shoreside catcher vessel operator calculates the MRA upon returning to port for delivery of retained catch.

When NMFS prohibits directed fishing on a groundfish species, MRAs buffer the amount of catch of species on bycatch status occurring in the open directed fisheries. Ideally, the application of an MRA rate slows catch of a species so that harvest can be managed up to the TAC by the end of the year. Beyond management of a TAC to obtain optimum yield, MRA calculations perform two additional functions. First, MRAs limit retention to species’ expected or accepted incidental catch rate. Alternately, the MRA functions as a trip limit for retention of incidental catch of a species. This function allows for limited targeting of a species up to the MRA (“topping off”).

For several incidental/basis species combinations, the use of low MRA rates may reduce the incentive for topping off that would occur in the absence of this tool. In these cases, the MRAs

represent the expected catch of an incidental species absent deliberate action by the vessel operator to maximize that incidental catch. The requirement to not exceed MRA proportion at any time during a trip limits the vessel operators' ability to maximize catch. This restriction is used to limit total catch of species with low TACs (relative to the species caught in the directed fisheries), at greater risk of being caught in excess of the overfishing level, and of high value. Several rockfish species and sablefish meet these criteria in the GOA.

Current regulations establish a relatively high MRA for particular species. For example, a generous rate of 35 percent for arrowtooth flounder as an incidental species is applied to open groundfish targets as a basis species (Appendix 1). Several directed trawl fisheries incurred high arrowtooth flounder incidental catch rates. The higher MRA allows for increased indirect targeting on arrowtooth flounder. For other species where restricting catch to an incidental rate is not a consideration, regulations establish a default MRA rate of 20 percent.

The MRA regulations identify basis and incidental species retention on different timeframes and species compositions than the CAS target calculations; therefore, this analysis does not show catch associated only with arrowtooth flounder as a basis species. Vessels may retain several species open to directed fishing. If several species are open to directed fishing and are landed together, the predominate retained species is generally assigned as the target. The display of annual retained and discarded species within the arrowtooth flounder target therefore does not reflect the MRA proportions, but rather, a dynamic of the trawl groundfish fishery.

3.3 Arrowtooth Flounder Fishery

Arrowtooth flounder (*Atheresthes stomias*) range from central California to the eastern Bering Sea and are currently the most abundant groundfish species in the Gulf of Alaska. Prior to 1990, flatfish catch in the GOA was reported as an aggregate of all flatfish species. The principal flatfish targets at that time were rock sole (shallow-water flatfish), rex sole, and Dover sole (deep-water flatfish). Substantial amounts of arrowtooth flounder and other flatfish were discarded at sea because of undesired species, size, or sex. Total GOA catch of arrowtooth flounder, including targeted and incidental catch, has ranged between 13,000 mt (1998) and 27,645 mt (2006). The catch of arrowtooth flounder in the targeted fishery has increased from 6,767 mt (1997) to 15,344 mt (2006). The vast majority of arrowtooth flounder catch is taken by trawl gear. Catches of arrowtooth flounder in recent years have approached established TACs in some areas. In order to reduce potential discards of arrowtooth flounder, the Council raised the TAC for arrowtooth flounder from 5,000 mt to 8,000 mt in the Western GOA in 2001 and from 25,000 mt to 30,000 mt in the Central GOA in 2007.

The MRA regulations identify basis and incidental species retention on different timeframes and species compositions than the CAS target calculations; therefore, Tables 3 through 6 do not show catch associated only with arrowtooth flounder as a basis species. Vessels may retain several species open to directed fishing. If several species are open to directed fishing and are landed together (which is generally the case), the predominate retained species is assigned as the target. The display of annual retained and discarded species within the arrowtooth flounder target therefore does not reflect the MRA proportions, but rather, a dynamic of multiple target species caught together in the trawl groundfish fishery. These tables list all the species that are caught in

conjunction with arrowtooth flounder. The information was calculated from discard rates observed from at-sea sampling and industry reported retained catch. Table 2 includes discarded and retained GOA arrowtooth flounder from 1997 to 2006. Most apparent in Table 2 is the decline in the percent discarded, which declined from a high of 84 percent in 1998 to a low of 36 percent in 2005. Tables 3 through 6 present the catch of groundfish attributed to the arrowtooth flounder fishery by the NMFS catch accounting system.

The proportion of arrowtooth flounder that is retained has increased in recent years indicating that the species has become a legitimate target. Catch data in Table 7 indicate the retention status of arrowtooth flounder for two recent years, 2005 and 2006, and for the year when the change in MRA status was implemented, 1997. For the entire groundfish fleet, recent discards in the arrowtooth flounder target are less than 20 percent compared to over 30 percent in 1997.

In the GOA the arrowtooth flounder fishery is almost exclusively prosecuted by CPs and CVs using bottom trawl gear. Although arrowtooth flounder is open to other vessel categories and gear types, very small amounts of arrowtooth flounder are harvested by other gear types and only then as incidental catch. Table 8 shows that within the trawl catch about 56 percent are taken by CVs and 44 percent by CPs.

The limited amount of arrowtooth flounder taken by hook-and-line gear is incidental to the sablefish and Pacific cod fisheries. Within CVs, the hook-and-line fishery for sablefish takes the vast majority. Additional amounts are taken in the CP hook-and-line fishery for sablefish and their fishery for Pacific cod. Within the CP hook-and-line fisheries, about half of the arrowtooth flounder caught was retained. Within the CV hook-and-line fishery, all arrowtooth flounder was discarded.

Trawl-caught arrowtooth flounder is distributed among several targets and tends to group based on processing mode. Figure 1 shows that CPs take arrowtooth flounder predominately in the arrowtooth flounder target, followed by rex sole, flathead sole, and small amounts in the rockfish target. CVs likewise take the majority of their arrowtooth flounder in the arrowtooth flounder target followed by pollock, shallow-water flatfish (the catch is predominately rock sole), rockfish, and Pacific cod.

In general, the majority of the harvest of arrowtooth flounder occurs between March and May. Depending upon the availability of the halibut PSC allowance for the deep-water complex, vessels may also target arrowtooth flounder in October and November. Catch patterns for the Central GOA show that most of the directed fishing for arrowtooth flounder occurs in the spring following the closure of the Pacific cod A season. In the Western GOA, most of the directed fishing for arrowtooth flounder occurs during the spring by CP vessels coming from the Bering Sea after the rock sole and yellowfin sole closures. Following the seasonal closures of these fisheries, vessels target arrowtooth flounder until the second seasonal halibut bycatch cap for the deep-water complex is reached, which is most often in May. Generally, after the arrowtooth flounder fishery closes, these vessels shift to several different targets; notably flatfish species in the shallow-water complex, rockfish, pollock, and Pacific cod as the seasonal allowances of these targets become available. The implementation of the Rockfish Pilot Program in the Central GOA in 2007 may result shifts in effort and timing of the arrowtooth flounder fishery. Figure 2 shows that in 2006 the catch of arrowtooth flounder peaked in April while lesser amounts continued to be harvested later in the year from July through October.

Historically arrowtooth flounder has had limited value compared to many other groundfish species in the GOA. Prior to 1994, the species was used as a very low valued basis species to target species closed to directed fishing. For example arrowtooth flounder was retained on CVs as a basis for retaining sablefish. Once the sablefish and arrowtooth flounder were delivered to a plant, the arrowtooth flounder was either sent to a meal plant or discarded. In 1994 all MRAs relative to arrowtooth flounder were set at zero. In 1997 the MRAs for Pacific cod and pollock were set at 5 percent and for forage fish at 2 percent. The 1994 and 1997 actions shared the intent of improving the use of halibut bycatch mortality relative to the other trawl groundfish targets and slowing the catch rate of sablefish. The 1997 rule also intended to increase utilization of pollock and Pacific cod in the directed arrowtooth flounder fishery. At that time, there were concerns that fishing vessel operators would target arrowtooth flounder to increase the retainable amounts of valuable species closed to directed fishing and increase bycatch amounts of Pacific halibut. Increased halibut bycatch rates could result reaching halibut bycatch limits before the TACs established for other trawl target fisheries were harvested.

Markets for arrowtooth flounder have gradually been developing since 1997. Although arrowtooth flounder market prices fluctuate widely, this species now supports a viable target fishery. The principle buyers of arrowtooth flounder are China and Japan. The primary product for arrowtooth flounder is the frill, which is the fleshy fins used for engawa, a type of sushi. Engawa, normally a premium sushi made from halibut or Greenland turbot, is more affordable using arrowtooth flounder. Unlike most other flatfish, the frill of the arrowtooth flounder is sufficiently sized to cover the rice on sushi, which is critical in sushi markets. The primary market for arrowtooth flounder engawa is Japan. A secondary product for arrowtooth flounder is fillets. A large portion of the arrowtooth flounder fillets exported to China are processed there and then reimported to the U.S. markets as inexpensive flounder. Some arrowtooth flounder processed in Japan is also sold as fillets in the Japanese market. Recently, some arrowtooth flounder fillets have shown up in European markets.

Average gross earnings per round metric ton of retained arrowtooth flounder received by both shoreside processors and CP vessels increased from 2001 to 2005 are displayed in Table 9. For shoreside processors, these estimates include the product value of catch from both Federal and State of Alaska fisheries. For CPs, they include only the product value from catch counted against Federal TACs. These price approximations are based on a combination of weekly production reports, Alaska Commercial Operators Annual Reports (COARs), and blend and other catch accounting data, and tend to support anecdotal observations from the Groundfish Data Bank that prices for this species have increased in recent years.

3.4 Groundfish MRAs for the Arrowtooth Flounder Fishery

In 1994 the Council chose to prohibit the use of arrowtooth flounder as a basis for calculating retainable amounts of groundfish species closed to directed fishing (59 FR 18229; July 27, 1994). In 1997 it set most of the groundfish MRAs at zero relative to retained amounts of arrowtooth flounder to prevent vessels from using arrowtooth flounder as a basis species for retention. In the GOA the MRAs for pollock and Pacific cod were established at 5 percent and for aggregated forage fish at 2 percent. Limited markets existed when this regulation was

implemented as a final rule (62 FR 11109; March 11, 1997). At that time, there were concerns that fishing vessel operators would target arrowtooth flounder to increase the retainable amounts of valuable species closed to directed fishing and increase bycatch amounts of Pacific halibut. Increased halibut bycatch rates could result in reaching halibut bycatch limits before the TACs established for other trawl target fisheries were harvested. Current MRAs for groundfish in the arrowtooth flounder fishery are listed in Table 1 and Appendix 1.

The 1997 proposed rule (62 FR 724; January 6, 1997) to allow the use of GOA arrowtooth flounder as a basis species for pollock and Pacific cod when they are closed to directed fishing noted that a limited fishery for GOA arrowtooth flounder exists and that this species should be allowed as a basis species for the retention of pollock and Pacific cod. This action resulted in an increase from 0 percent to 5 percent for these species in the arrowtooth flounder fishery. Since 1997, markets for arrowtooth flounder have been developed and this species now supports a viable target fishery. As a result, representatives for the GOA trawl industry now support changing the MRAs for GOA groundfish to expand the use of arrowtooth flounder as a basis species for the retention of groundfish closed to directed fishing. This change would provide the opportunity to the trawl fishing industry to retain more groundfish and reduce regulatory discards.

Recently the total gulf wide retained catch of arrowtooth flounder, including targeted and incidental catch, has increased while discards have decreased (Tables 2 and 7). The vast majority of arrowtooth flounder catch is taken by trawl gear. Catches of arrowtooth flounder in recent years have approached established TACs in some areas. In order to reduce potential regulatory discards of arrowtooth flounder, the Council raised the TAC for arrowtooth flounder from 5,000 mt to 8,000 mt in the Western GOA in 2001 and from 25,000 mt to 30,000 mt in the Central GOA in 2007. With the development of the arrowtooth flounder fishery the amount of halibut mortality attributed to the arrowtooth flounder fishery has increased dramatically from 78 mt in 1997 to 616 mt in 2006. This increase makes less halibut mortality available to support the other directed groundfish fisheries in the trawl deep-water complex (deep-water flatfish, rex sole, and rockfish) from January 20 to October 1 and to all groundfish fisheries after October 1. Rockfish are also part of the deep-water complex, but beginning in 2007 under the Central GOA Rockfish Pilot Program; rockfish will be allocated a specific portion of the third seasonal deep-water complex halibut PSC allowance.

The Council approved two recently implemented amendments to the GOA FMP that influence current MRAs for incidentally caught species with respect to the directed arrowtooth flounder fishery. Amendment 63 removed skates from the “other species” TAC group and kept the MRA for skates the same as “other species” relative to all basis species. The MRA relative to the directed arrowtooth flounder fishery remained at zero. Amendment 69 revised the method used to set the “other species” TAC and revised the MRA relative to arrowtooth flounder as a basis species from 0 percent to 20 percent. The species that have MRAs of 0 percent relative to arrowtooth flounder (Table 1, Alternative 1) increase the likelihood of regulatory discards. The changes to MRAs proposed by the Alaska Groundfish Data Bank (Table 1, Alternative 2) are intended to increase the industry’s opportunity to reduce discards.

In February 2007 NMFS staff presented a discussion paper to the Council on the industry proposal to revise the MRAs for groundfish in the arrowtooth flounder fishery (NMFS 2007b).

Tables 3 through 6 show species caught within the arrowtooth flounder target by year (2003-2006). The CAS calculates single targets based on all retained catch and may include several species opened to directed fishing that are caught together. Targets are assigned to CPs on a weekly basis and to CVs on a landing basis. These data generally represent aggregate catch of multiple landing reports from CV and weekly production or observer reports from catcher/processors where arrowtooth flounder is calculated as the most prevalent species retained. Some of the discards identified in Tables 3 through 6 may be reduced and retention increased as a result of the adoption of either Alternative 2 or 3.

4 Environmental Effects of the Alternatives

An EA is prepared pursuant to NEPA to determine whether an action will result in significant effects on the human environment. An effect on a part of the environment may be either direct or indirect and beneficial or adverse. If the environmental effects of the action are determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact are the final environmental documents required by NEPA. If an analysis concludes that the action is a major Federal action that would significantly affect the human environment, an environmental impact statement (EIS) must be prepared.

NEPA significance is determined by considering both the context in which the action will occur and the intensity of the action. The context in which the action will occur includes the specific resources, ecosystem, and the human environment affected. The intensity of the action includes the type of impact (beneficial versus adverse), duration of impact, and other factors (see 40 CFR 1508.27(b)). NEPA regulations contain a listing of considerations to use to determine intensity, as does NOAA Administrative Order 216-6.

Context: The context for the proposed action is setting the MRAs for groundfish using arrowtooth flounder as a basis species in the GOA. Any effects of this action are directly limited to the GOA. The effects on society within the GOA are on individuals directly and indirectly participating in the groundfish fisheries and on those who use GOA ocean resources. The proposed action would make various revisions to the MRAs for groundfish using arrowtooth flounder as a basis species in the GOA. This action would have no significant impacts on society as a whole or regionally.

Intensity: A listing of considerations to determine the intensity of the impacts can be found at 40 CFR 1508.27(b) and in NOAA Administrative Order 216-6. The proposed action would make various revisions to the MRAs for groundfish using arrowtooth flounder as a basis species in the GOA. The intensity of this action is believed to be low because it is not likely to reduce the harvest of groundfish, but would reduce discards currently required by regulation. Additionally the duration of the action is expected to be brief; principally occurring during times when the shallow-water complex is closed to directed fishing by vessels using trawl gear and directed fishing for the deep-water complex is concurrently open.

The environmental impacts generally associated with fishery management actions are effects resulting from interactions with (1) targeted groundfish species, (2) non-specified species, (3) forage species, (4) prohibited species, (5) marine mammals, (6) seabirds, (7) benthic habitat and essential fish habitat, (8) the ecosystem, and (9) the economic and social conditions. This action

would have no impacts on non-specified species, forage species, prohibited species, seabirds, habitat, or the ecosystem not previously considered in the harvest specification EIS (NMFS 2007a). This analysis will focus on the environmental components that could potentially be affected by this action; stocks of targeted groundfish, species listed under the ESA, and social and economic conditions.

4.1 Effects on Groundfish Stocks

This action proposes three alternatives for MRAs for groundfish in the arrowtooth flounder fishery in the GOA, two of which would revise (increase) the MRAs for groundfish using arrowtooth flounder as a basis species in Table 10 to 50 CFR part 679 (Appendix 1) that are applicable to deep-water flatfish, rex sole, flathead sole, shallow-water flatfish, sablefish, rockfish, Atka mackerel, and skates. None of the alternatives considered would revise the current MRAs for pollock, Pacific cod, the “other species” category (sharks, squid, octopus, and sculpins), or forage fish.

Alternative 1, the status quo or no action alternative, would not revise the MRAs for groundfish species in the arrowtooth flounder fishery. Maintaining the existing MRAs for groundfish species in the arrowtooth flounder fishery would have no impact on groundfish stocks. Overall the full harvest of the TACs established for the groundfish species have been found to have no adverse effects on the groundfish species (NMFS 2007a). The effect of arrowtooth flounder fishery on groundfish species is limited primarily by the TAC established for arrowtooth flounder and by the amount of the halibut PSC allowed in the trawl fisheries. For these reasons, Alternative 1 would have no impacts on groundfish stocks.

Under Alternatives 2 and 3, the MRAs for groundfish in the arrowtooth flounder fishery would be raised from current levels. As a result greater amounts of groundfish closed to directed fishing could be retained in the arrowtooth flounder fishery. The effect of arrowtooth flounder fishery on groundfish species is limited primarily by the TAC established for arrowtooth flounder and by the amount of the halibut PSC allowed in the trawl fisheries. However the total harvest of groundfish would still be limited by the TACs established for them and as noted above the full harvest of the TACs established for the groundfish species have been found to have no adverse effects on the groundfish species (NMFS 2007a). For these reasons the adoption of either Alternative 2 or Alternative 3 would have no impacts on groundfish stocks. Estimates of discards in the groundfish fisheries are based on observer estimates which are not as accurate as landing and production reports. By allowing increased retention of groundfish in the arrowtooth flounder fisheries estimates of catch would be improved.

Tables 3 through 6 above present the catch amounts of groundfish assigned to the arrowtooth flounder fishery for the years 2003 through 2006 using CAS data. Fishing vessels may have targeted multiple species during the trip or reporting period however the CAS assigns them to the arrowtooth flounder fishery when arrowtooth flounder was the predominate species retained during the trip or reporting period.

4.2 Steller Sea Lions

The eastern and western distinct population segments (DPS) of Steller sea lions (SSL) and their designated critical habitat occur in the GOA. The western DPS is listed as endangered and the eastern DPS is listed as threatened under the Endangered Species Act (ESA). NMFS has jurisdiction under the ESA over SSL and is responsible for the conservation and recovery of the species. To ensure the Alaska groundfish fisheries are not likely to result in jeopardy of extinction or adverse modification of critical habitat, SSL protection measures were implemented in 2003 and further revised in 2004 for the GOA (68 FR 204, January 2, 2003 and 69 FR 75865, December 20, 2004). These protection measures control the overall harvest of principal prey species (pollock, Pacific cod, and Atka mackerel) and provide temporal and spatial dispersion of harvests to avoid competition for prey between SSL and the groundfish fisheries. Additionally all directed fishing for Atka mackerel is prohibited year round in the GOA and the species is placed on bycatch status at the beginning of each year (see 67 FR 56692, September 4, 2004).

Federal actions must be in compliance with the provisions of the ESA. Section 7 of the ESA provides a mechanism for consultation by the Federal action agency with the appropriate expert agency. NMFS Sustainable Fisheries Division consults on fisheries management actions that may affect marine mammals with NMFS Protected Resources Division. Informal consultations, resulting in letters of concurrence, are conducted for Federal actions that have no adverse effects on the listed species. The action agency can prepare a biological assessment (BA) to determine if the proposed action would adversely affect listed species or modify critical habitat. The BA contains an analysis based on biological studies of the likely effects of the action on the species or habitat.

Formal consultations, resulting in a Biological Opinion, are conducted for Federal actions that may have an adverse effect on the listed species. Through the Biological Opinion, a determination is made about whether the proposed action poses “jeopardy” or “no jeopardy” of extinction or adverse modification or destruction of designated critical habitat for the listed species. Summaries of the ESA consultations before 2007 on individual ESA-listed species are located in the Groundfish EIS (NMFS 2007a). Based on the availability of new information since the last program level Biological Opinion, the Alaska groundfish fisheries are currently under a program level consultation for SSLs, humpback whales, and sperm whales. In addition, a draft recovery plan for SSL is scheduled for public review in May 2007. The Council is currently reviewing new information regarding SSL biology and potential fisheries interactions and is reviewing proposals for changes to the Alaska fisheries that would continue protection to SSL while providing economic relief to the industry. No changes are expected until after the completion of the recovery plan and program level Biological Opinion.

Three types of effects on SSL could occur from groundfish fisheries. Groundfish fisheries incidentally take SSL during fishing operations. Groundfish fisheries may also disturb SSL so that they are unable to perform behaviors necessary for survival such as resting and reproduction. The alternatives to this action would not result in a change in the fisheries that are likely to increase the potential for incidental takes or disturbance of SSL because there is no change in the overall location, gear type or potential interaction with the animals during fishing among the alternatives. The last potential effect of the groundfish fisheries is the potential competition for prey species. The proposed action would revise the MRAs for the arrowtooth flounder fishery,

allowing additional groundfish closed to directed fishing to be retained in the arrowtooth flounder fishery. Under each alternative the MRAs for pollock and Pacific cod are unchanged and were part of the management measures considered in the SSL Protection Measures SEIS (NMFS 2001). Alternative 1 would leave the MRA for Atka mackerel in the arrowtooth flounder fishery unchanged at 0 percent. Alternative 2 would raise the MRA for Atka mackerel in the arrowtooth flounder fishery from 0 percent to 20 percent, while Alternative 3 would raise the MRA for Atka mackerel to 5 percent.

Depending on the alternative, this action may change the potential overall removal of Atka mackerel as an incidental catch species within SSL critical habitat. Atka mackerel is a species that may be locally depleted because of the way it behaves and therefore, any potential increase of removals within critical habitat warrant further analysis.

To understand the potential impacts, we need to understand the current conditions for SSL in the area and their use of Atka mackerel during the year and how that may overlap with potential fishing activities. Counts of non-pup sea lions in 2006 were essentially unchanged from 2004 counts in the eastern and western survey areas in the GOA and have increased between 2000 and 2004 (Fritz et al. 2006). In a study of sea lion scats between 1999 and 2005, Atka mackerel was an important part of the sea lions' diet during summer months in the Western GOA (Table 10). As described above there is very little targeting of arrowtooth flounder in the summer months; and therefore, little likelihood of Atka mackerel being taken incidentally during arrowtooth flounder targeted fishing in the summer if fishing practice remain the same.

In recent years the incidental catch of Atka mackerel has been under 0.5 percent (Tables 3-6). Recently, the catch of Atka mackerel in the arrowtooth flounder fishery has been very low, averaging 2 mt in 2004 and 2006 from a high of 42 mt in 2003. The 2007 Atka mackerel TAC is 1,500 mt and the acceptable biological catch is 4,700 mt. The full harvest of the Atka mackerel TAC would not be expected to increase competition to the point of having a population effect on SSLs because the TAC is well below the acceptable biological catch.

However, if increased harvest of Atka mackerel occurred in the arrowtooth flounder fishery within SSL protection areas due to topping off, this behavior could lead to localized depletions within SSL critical habitat that were not previously considered. This behavior would have less of an effect in the Eastern and Central GOA where it appears there is very little or no dependence on Atka mackerel by SSLs. Topping off inside critical habitat in the Western GOA in the summer would be more of a concern due to the apparent potential competition for Atka mackerel between SSLs and the fisheries that may occur. For these reasons NMFS believes that Alternative 1 would have no effects on SSLs or their designated critical habitat regarding prey competition beyond those already considered under previous consultations. If increasing the MRA for Atka mackerel in the arrowtooth flounder fishery resulted in a change from current fishing practices (i.e., topping off on Atka mackerel), and if this activity occurred in SSL critical habitat in the Western GOA in the summer, there could potentially be localized depletion of SSL prey. Under Alternatives 2 and 3, NMFS would undertake an ESA consultation due to the change in the action and its potential adverse effect on SSL designated habitat. Possible adverse impacts on SSLs considered under Alternative 2 would be less under Alternative 3 as it would constrain topping off on Atka mackerel in the arrowtooth flounder fishery to a greater degree than Alternative 2. If fishing operations targeting arrowtooth flounder were conducted as in recent years and did not top off on Atka mackerel, NMFS believes that no impacts of Alternative

2 and 3 on SSLs and their critical habitat would occur. Even though the effects of Alternatives 2 and 3 would require ESA consultation because of the potential for adverse effects on critical habitat, the impacts are isolated within the western GOA and are unlikely to result in population level effects. Based on the significance criteria developed for use in the 2006-2007 groundfish harvest specifications EA (NMFS 2005b), there is not likely to be a population level effect, so the potential effect of Alternatives 2 and 3 are likely insignificant.

4.3 Social and Economic Effects

This section provides an analysis of three alternatives: 1) Status Quo/No Action, 2) industry proposed MRAs, and 3) MRAs near recent high incidental catch levels. Assessing the effects of the alternatives involves some degree of speculation. In general, the effects arise from the actions of individual participants in the fisheries under the incentives created by the different alternatives. Predicting these individual actions and their effects is constrained by the novelty of the program under consideration and incomplete information concerning the fisheries, including the absence of complete economic information and well-tested models that predict behavior under different institutional structures. In addition, exogenous factors, such as stock fluctuations, market dynamics, and macro condition in the global economy, will influence the responses of the participants under each of the alternatives.

4.3.1 Alternative 1: Status Quo/No Action

Under Alternative 1, the MRAs would not be revised for groundfish species in the GOA directed arrowtooth flounder fishery. Maintaining the existing MRAs would continue to require trawl CVs and CPs to discard any groundfish species that have an MRA of zero percent if those fisheries were closed to directed fishing. For a more detailed description of status quo, see the background section of the Regulatory Impact Review (Section 5.3). Overall, the status quo alternative is likely to result in the continuation of existing practices and patterns. However, in the future, if the price of arrowtooth flounder continues to increase, the economic incentive for trawl vessels to target arrowtooth flounder will likely increase thus potentially resulting in higher regulatory discards of valuable bycatch species.

4.3.2 Alternatives 2 and 3

Impacts to the Arrowtooth Flounder Fishery

Under Alternatives 2 and 3, trawl sectors targeting GOA arrowtooth flounder could retain a higher percentage of the incidental caught groundfish that are closed to directed fishing. Many of the species are open to directed fishing concurrently with arrowtooth flounder. Arrowtooth flounder is grouped with deep-water flatfish and rex sole in the deep-water species complex¹. When the deep-water complex is open to directed fishing, arrowtooth flounder, rex sole, and deep-water flatfish can be retained at rates unrestricted by the MRA tables. Likewise, when the shallow-water complex is open concurrently with the deep-water complex, flathead sole and

¹ The deep-water species fishery are all rockfish of the genera *Sebastes* and *Sebastolobus*, deep-water flatfish, rex sole, arrowtooth flounder, and sablefish.

shallow-water flatfish can be retained without proportional restrictions. However, it is possible the shallow-water complex can close to directed fishing while the deep-water complex is still open for directed fishing. In addition, many of the rockfish species (thornyhead, shortraker, and roughey) are closed to directed fishing on January 1 due to the insufficient TAC. As a result, these species are placed on bycatch status, and could be retained up to the MRA percentage under Alternatives 2 and 3 in the arrowtooth flounder target fishery.

Given the general trend in the price for arrowtooth flounder, increasing the MRAs for incidentally caught species could provide enough of an economic incentive for the some trawl vessels to target arrowtooth flounder more often. The economic characteristics of the trawl CP and CV sectors vary widely. It is possible that some participants will take into consideration the economic value of the bycatch species in the directed arrowtooth flounder fishery to estimate the benefit of targeting arrowtooth flounder. Under Alternative 1, those groundfish species with an MRA set at zero that are closed to directed fishing must be discarded, regardless of the value of the species. Under Alternatives 2 and 3, high valued bycatch species that are closed to directed fishing could be retained up to the MRA, thus potentially increasing the vessel's net revenue while targeting arrowtooth flounder. In those cases were a vessel is on the margin for targeting arrowtooth flounder under Alternative 1, increasing the MRAs for arrowtooth flounder under Alternatives 2 and 3 could be enough of economic incentive to induce entry into the arrowtooth flounder target fishery.

In considering the status of bycatch fisheries for purposes of determining economic value of targeting arrowtooth flounder, the bycatch fisheries considered will be limited to deepwater flatfish, rex sole, flathead sole, shallow-water flatfish, Atka mackerel, skates, and to a lesser extent aggregated rockfish. In designing the alternatives for this action, it was the intent to keep several species at or near status quo levels to reduce the economic incentive for vessels to use arrowtooth flounder fishery to increase catch of pollock, Pacific cod, sablefish, aggregated rockfish, and forage fish.

Halibut PSC Effects

Trawl groundfish fishing is highly influenced by halibut bycatch mortality management in the GOA. Groundfish fisheries are divided into two general categories; the deep-water complex and the shallow-water complex². Each complex is allocated a portion of a 2,000 mt halibut mortality limit which is allocated across five seasons. The final season in October is not apportioned between the two complexes.

With the development of the arrowtooth fishery, the amount of halibut mortality attributed to the arrowtooth flounder fishery has increased dramatically. Table 11 shows the halibut mortality in the arrowtooth flounder fishery has increased from 78 mt in 1997 to 616 mt in 2006. This increase reduces the halibut mortality available to support the other directed groundfish fisheries

² At §679.21 (d)(3)(iii) these fisheries are defined as follows: (A) Shallow-water species fishery. Fishing with trawl gear during any weekly reporting period that results in a retained aggregate catch of pollock, Pacific cod, shallow-water flatfish, flathead sole, Atka mackerel, and "other species" that is greater than the retained aggregate amount of other GOA groundfish species or species group. (B) Deep-water species fishery. Fishing with trawl gear during any weekly reporting period that results in a retained catch of groundfish and is not a shallow-water species fishery as defined under paragraph (d)(3)(iii)(A) of this section.

in the trawl deep-water complex (deep-water flatfish, rex sole, and rockfish) from January 20 to October 1 and to all groundfish fisheries after October 1.

Harvest of the deep-water flatfish TAC has historically been limited, in part, because of halibut PSC constraints. The TAC set for deep-water flatfish includes Dover sole, Greenland turbot, and deep sea sole. Historically, the TAC for deep-water flatfish has been relatively small. The Western Gulf TAC was set at only 330 mt, as of December 2005, and the Central Gulf TAC was 3,340 mt. During the 2004 fishing year, only 7 mt (2 percent) of the Western Gulf deep-water flatfish TAC, and 614 mt (21 percent) of the Central Gulf deep-water flatfish TAC, were harvested. Deep-water flatfish harvests in 2005 were reported to be at similar levels.

Rex sole and arrowtooth flounder are other flatfish species that are prized by the trawl sectors and harvested under the deep-water species complex allotment. These flatfish species are also constrained by halibut mortality limits. During the years 2004-2005, less than 50 percent of the TAC was harvested for each of these species in the Western, Central, and West Yakutat areas of the GOA (the only exception is that 67 percent of the Central Gulf arrowtooth flounder TAC was taken in 2005). Although the arrowtooth flounder market is currently showing some signs of market saturation through weakening prices, the markets in the future are likely to accept additional deliveries of these species if they can be harvested. The primary constraint on their harvest is the availability of halibut PSC.

A specific amount of halibut PSC mortality is apportioned to the deep-water species complex. The deep-water species complex allotment is set for the entire GOA. The allotment is not divided by sub-area in the GOA. Therefore when the halibut mortality allotment for the deep-water complex is taken, all the deep-water fisheries in the GOA are closed to directed fishing. Information on deep-water closures that occurred as a result of halibut mortality in the GOA is provided in Table 12. The information provided in that table shows that halibut bycatch has traditionally caused fisheries in this group to close. Recall that these closures are Gulf-wide, so the closures apply to the Western, Central, West Yakutat, and Eastern Areas of the GOA.

Increasing the MRAs for the directed arrowtooth flounder fishery under Alternatives 2 and 3 would likely increase the demand for halibut PSC that is apportioned to the deep-water species complex. Given that halibut PSC is not apportioned between trawl sectors, the pace of fishing could increase as trawl vessels race to harvest more of the species in the deep-water complex fisheries before halibut PSC is fully utilized.

Trawl vessels that participate in GOA fisheries are expected to continue to harvest deep-water complex species that allow them to generate the greatest profits within the PSC halibut bycatch limits. Other flatfish targets (shallow-water flatfish, rex sole, flathead sole, deep-water flatfish) are far less abundant in the GOA than arrowtooth. Vessels targeting these flatfish species receive higher prices per mt but lower catches per fishing day compared to arrowtooth. What arrowtooth flounder lacks in value it makes up for in volume. An average shoreside trawl vessel can fill its fish holds in a single day. Now that markets exist for arrowtooth flounder it becomes an economic decision for the trawl fleet to decide whether to use the halibut PSC allowance to support a low volume, high value fishery like rex sole or a high volume, low value fishery like arrowtooth.

Regulatory Discards

With the exception of pollock, Pacific cod, other species, and forage fish, under Alternative 1, all incidental caught groundfish species closed to directed fishing that are caught while targeting arrowtooth flounder have to be immediately discarded. Under Alternative 2 and 3, incidental caught groundfish species that are closed to directed fishing while targeting arrowtooth flounder could be retained up to the MRA, thus potentially reducing regulatory discards. Given recent actions by the Council in the BSAI to reduce discards, reduction of regulatory discards would likely improve the retention rate for trawlers in the GOA.

Table 13 shows total catch and discard rates in the 2006 GOA trawl arrowtooth flounder target by processing component. It displays the annual general mix of species and the associated discard rates associated with the trawl arrowtooth flounder target.

The multiple species ‘arrowtooth flounder target’ consists of higher-valued species (all often open to directed fishing) that are retained at a high rate. Table 13 indicates a distinction between processing modes in the types of species retained within the broad arrowtooth flounder target. Figure 1 likewise indicates distinctions between CPs and CVs in targets where arrowtooth flounder is caught.

Table 14 shows the amount of retained catch by processing component by species in descending order. It indicates the preference of retained catch in the more generalized arrowtooth flounder/flatfish target.

Reviewing total and retained catch in the trawl arrowtooth flounder targets reveals that arrowtooth flounder is often a directed fishery and it can be taken in combination with other targets or species open to directed fishing. Depending on the actual incidental catch rates and status of the fisheries, some of the incidental catch of species closed to directed fishing associated with an arrowtooth flounder target may be retained against other species open to directed fishing and taken within the arrowtooth flounder target. Conversely, some species may be discarded because of the limited (or zero) MRAs that are calculated against arrowtooth flounder. To the extent that this occurs, more species may be retained as a result of the proposed changes to the MRAs, thus reducing regulatory discards.

Under the 2006 final groundfish harvest specifications, all skates were closed to directed fishing because most of the available quotas were necessary as incidental catch. Not enough skate TAC was available to conduct a directed fishery. Table 15 shows discard rates for skates ranging from 72 percent for ‘other’ skates, 49 percent for longnose skates, and 21 percent for big skates. Although a direct relationship between skate discards and the arrowtooth flounder fishery cannot be succinctly demonstrated in the CAS, it may be that some of the discards are associated with arrowtooth flounder MRA restrictions. An increase of the MRA as proposed from 0 percent to 20 percent will allow increased retention of a species currently discarded relative to arrowtooth flounder.

The expected economic effects are discussed in Section 5.6 of the RIR. The expected effects of the considered alternatives are summarized below.

4.4 Cumulative Effects

NEPA requires that EAs analyze the potential cumulative effects of a proposed action and its alternatives. An EA must consider cumulative effects when determining whether an action significantly affects environmental quality. Cumulative effects are those combined effects on the quality of the human environment that result from the incremental impacts of the proposed action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7, 1508.25(a), and 1508.25(c)). Cumulative impacts can result from individually minor, but collectively significant, actions over time. The concept behind cumulative effects analysis is to capture the total effect of many actions over time that would be missed by evaluating each action individually.

The potential direct and indirect effects of the GOA groundfish fisheries on target species are detailed in the Final PSEIS (NMFS 2004, Chapter 4). Direct effects include fishing mortality, changes in biomass, and spatial and temporal concentration of catch that may lead to a change in the population structure. Indirect effects include the changes in prey availability and changes in habitat suitability. Indirect effects are not anticipated to occur with any of the alternatives analyzed because the proposed action would not change overall fishing practices that indirectly affect prey availability and habitat suitability. If fishing practices were to change under Alternatives 2 and 3 by vessels topping off on Atka mackerel in SSL critical habitat using arrowtooth flounder as a basis species, one indirect effect could be a reduced availability of prey for SSLs; however, the extent to which this might occur is unknown. To the extent practicable, this analysis incorporates the cumulative effects analysis in the PSEIS.

No additional past, present, or reasonably foreseeable cumulative negative impacts on the natural and physical environment have been identified that would accrue for the proposed action. Cumulatively significant negative impacts on these resources are not anticipated with the proposed action because no negative direct or indirect effects on GOA resources have been identified.

4.5 Future Considerations and Pending Actions

There are a number of actions that have been implemented or that currently are being developed that will affect the GOA groundfish fisheries, including the arrowtooth flounder fishery.

2007-2008 GOA Groundfish Harvest Specifications

The annual harvest specifications establish annual ABC, TAC, PSC and various other catch limits for two year, overlapping cycles. In the final groundfish harvest specifications established for 2007-2008, NMFS increased the TAC for arrowtooth flounder in the Central GOA from 25,000 mt in 2006 to 30,000 mt for the 2007 and 2008 fishing years. This action was taken primarily to avoid regulatory discards of arrowtooth flounder as the fishery develops. Should the 2007 and 2008 TACs for arrowtooth flounder be fully utilized under Alternative 1, regulatory discards of other groundfish species would be expected to increase. Halibut mortality in the arrowtooth flounder fishery would also be expected to increase making less halibut mortality available to support other directed groundfish fisheries, most notably the deep-water flatfish and rex sole fisheries.

Rockfish Pilot Program in the Central GOA

The Rockfish Program in the Central GOA begins in 2007. Three principal rockfish targets, Pacific ocean perch, northern rockfish, and pelagic shelf rockfish, are allocated to participating user groups. For those vessels fishing in cooperatives specific amounts of associated secondary species (Pacific cod, rougheye and shortraker rockfish, thornyhead, and sablefish) are also allocated. MRAs will not apply for those species and those not taken incidentally may be taken by directed fishing. For those vessels fishing in the limited access fishery lower MRAs than at present will apply. A specific amount of the third seasonal apportionment of halibut mortality from the deep-water complex will be allocated to those vessels participating in cooperatives. The arrowtooth flounder fishery is not expected to have any effect on the Rockfish Program fishery. However the flexibility accorded to vessels participating in the Rockfish Program may allow more vessels to enter the arrowtooth flounder fishery.

GOA Rationalization

The development of a Gulf Rationalization program has slowed pending additional social and economic analyses of potential impacts. Still a rationalization program could include many of the management measures incorporated into the Rockfish Program including a more comprehensive review and revision of MRAs for groundfish as basis species.

Fisheries Recordkeeping and Reporting Revisions

NMFS is preparing a regulatory amendment to 50 CFR part 679 that will make several revisions to recordkeeping and reporting requirements. It will implement an interagency electronic reporting system, called E-landings, for use by shoreside seafood processors; provide an option for the use of electronic logbooks rather than paper logbooks by CVs, CPs, and motherships; provide more uniform language; and revise permit-related regulations. These changes are intended to improve the method and procedures for recordkeeping and reporting for the fishery programs administered by NMFS, Alaska Region, the Alaska Department of Fish and Game, and the International Pacific Halibut Commission. E-landings can be currently used to report landings and production data for groundfish statewide, Individual Fishing Quota (IFQ)/Community Development Quota (CDQ) crab and Community of Adak golden king crab, and halibut and sablefish IFQ. E-landings is intended to simplify and standardize reporting across fisheries and make fisheries data more readily and accurately available to fisheries managers and the fishing industry. In the future, the system will include landings and production data reports for shellfish, salmon, and other fisheries.

Private Sector Actions

The current development of halibut excluder devices for trawl gear could reduce halibut mortality in the arrowtooth flounder fishery. In the GOA halibut mortality is the major constraint on further development of the arrowtooth flounder and other flatfish fisheries. Several shoreside vessels plan to experiment with using pelagic trawl gear to target arrowtooth flounder in 2007 with the goal of reducing bycatch.

5 Regulatory Impact Review: Economic Impacts of the Alternatives

This chapter provides information on the economic and socioeconomic impacts of the alternatives, as required by Executive Order 12866 (E.O. 12866). This chapter includes a description of the purpose and need for the action and the management objects, a description of the alternatives proposed to meet those objectives, identification of the individuals or groups that may be affected by the action, the nature of those impacts (quantifying the economic impacts where possible), and discussion of the tradeoffs.

The preparation of an RIR is required under E.O. 12866 (58 FR 51735; October 4, 1993). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and Benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

E.O. 12866 requires that the Office of Management and Budget (OMB) review proposed regulatory programs that are considered to be “significant.” A “significant regulatory action” is one that is likely to

- Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in this Executive Order.

Under the Magnuson-Stevens Act, the United States has exclusive fishery management authority over all marine fishery resources found within the EEZ. The management of these marine resources is vested in the Secretary of Commerce (Secretary) and in the Regional Fishery Management Councils. The groundfish fisheries in the Gulf of Alaska (GOA) EEZ are managed under the FMP for Groundfish of the GOA.

The authority to alter the application of MRAs to groundfish fisheries, including changing MRA percentages for groundfish in the arrowtooth flounder fishery in the GOA is granted to NMFS under the Magnuson-Stevens Act. To the extent that MRAs may slow bycatch, the statutory authority for bycatch reduction measures is specifically addressed in Sec. 301(a) of the

Magnuson-Stevens Act. That section establishes National Standard 9—Bycatch, which directs the Councils to minimize bycatch and to minimize mortality of bycatch when it cannot be avoided.

Regulations for the GOA MRAs and how they are calculated are found at 50 CFR 679.20 parts (e) and (f) and in Table 10 to Part 679.

5.1 Purpose and Need for Action

In 1994, as a result of Council concern that directed fishing for arrowtooth flounder for the purpose of topping off³ with other, higher-valued species would result in unacceptably high halibut bycatch rates, NMFS prohibited the use of arrowtooth flounder as a basis for calculating retainable amounts of groundfish species closed to directed fishing. During this period, there were limited markets for arrowtooth flounder, so the species was discarded or rendered into meal. However, the halibut bycatch amounts associated with the arrowtooth flounder were credited against the overall halibut bycatch limits available to other fisheries. Increased halibut bycatch rates could result in reaching halibut bycatch limits before the TACs established for other trawl target fisheries were harvested.

In December 1995, NMFS initiated a change to the GOA arrowtooth flounder MRAs after hearing testimony that a limited fishery for GOA arrowtooth flounder exists and that this species should be allowed as a basis species for the retention of pollock and Pacific cod. The change to the GOA arrowtooth flounder MRAs was implemented in 1997, keeping most directed fisheries at zero percent to prevent vessels from topping off, but setting the MRAs for pollock and Pacific cod at 5 percent and for aggregated forage fish was set at 2 percent.

Since 1997, markets for GOA arrowtooth flounder have been developed and this species now supports a viable target fishery. In October 2006, the Council received a proposal from some members of the GOA trawl industry to revise the MRAs for groundfish in the arrowtooth flounder fishery in the GOA. Provided in the proposal from the industry was the suggested problem statement for this action:

When the MRAs were set in regulations, the Council chose to set incidental catch allowances at zero for a wide group of species to prevent vessels from using Arrowtooth as a basis species for retention since there was no market for Arrowtooth Flounder. Arrowtooth Flounder is now a viable target fishery and the MRAs for these other species need to be changed to remove the requirement for regulatory discards. The Council has had two recent amendments to the GOA FMP. The first amendment removed skates from the Other Species TAC group, and the second amendment uses a different method to set the Other Species TAC. In the first case, the Council did not change the MRA for Skates for the Arrowtooth target fishery but instead left the MRA at 0%, in the second case for other species the Council revised the MRA from 0% to 20%. As the table below shows (see Alternative 1 in Table 1) there are presently a suite of species that have MRAs of 0% which creates a conservation concern since any incidental catch of these species must be discarded at sea.

³ Topping off is the intentional targeting of an MRA species that is closed to directed fishing.

Council and NMFS staff have summarized the industry's proposal as the following strawman problem statement:

When the MRAs for the directed GOA arrowtooth flounder fishery were set in regulations in 1994, the Council chose to set incidental catch allowances at zero for a wide group of species to prevent vessels from using arrowtooth flounder as a basis species for retention since there was no market for arrowtooth flounder. Arrowtooth flounder is now a viable target fishery and efforts to improve retention of many groundfish species utilized by the trawl sectors are restrained by MRAs in the directed GOA arrowtooth flounder fishery. MRAs are a widely used groundfish management tool to reduce targeting on a species and slow harvest rates as an allocation approach. However, sometimes species managed with MRAs must be discarded, even though economic incentives exist to retain that species. Thus, the MRA forces regulatory discards of some species that might otherwise be retained without undermining the intent of the MRA as a tool to reduce overall harvest rates. This regulatory amendment would evaluate raising the MRAs for some species in the directed GOA arrowtooth flounder fishery to provide increased opportunity for retention of species harvested by the trawl sectors and reduce overall discards in this sector, while not subjecting incidentally caught species to increased allocation concerns.

5.2 MRA Regulations

MRA regulations establish the calculation method and MRAs for groundfish species that are closed to directed fishing. The MRA is calculated as a percentage of the retained amount of species closed to directed fishing relative to the retained amount of basis species or species groups open for directed fishing. All MRA accounting is computed based upon processed product that is converted to round weight. Table 10 of 50 CFR part 679 (see Appendix 1) lists retainable percentages for GOA incidental groundfish species used to calculate an MRA. Amounts that are caught in excess of the MRA percentage must be discarded. Current regulations limit vessels to MRAs at any time during a fishing trip.

A fishing trip is defined at 50 CFR part 679.2 as:

- (i) With respect to retention requirements of MRA, an operator of a CP or mothership processor vessel is engaged in a fishing trip from the time the harvesting, receiving, or processing of groundfish is begun or resumed in an area until
 - (A) The effective date of a notification prohibiting directed fishing in the same area under § 679.20 or § 679.21;
 - (B) The offload or transfer of all fish or fish product from that vessel;
 - (C) The vessel enters or leaves an area where a different directed fishing prohibition applies;
 - (D) The vessel begins fishing with different type of authorized fishing gear; or
 - (E) The end of a weekly reporting period, whichever comes first.

MRAs are the primary tool NMFS uses to regulate the catch of species closed to directed fishing. The MRA table is a matrix of proportions representing a range of rates of expected or accepted incidental catch of species closed to directed fishing relative to target species. As a management tool, MRAs rely on the ability of the vessel operator to selectively catch the target species. The target species is called a basis species in regulation. The species closed to directed fishing is the

incidental species. The MRA percentages are intended to slow the rate of harvest of a species when insufficient TAC or PSC amounts are available to support a directed fishery.

NMFS prohibits directed fishing for a species to avoid reaching a TAC (typically established for conservation reasons), reaching an amount or percent of groundfish included in the annual specifications for a gear and species or species group, or for a prohibited species limit (e.g., halibut limits). When NMFS prohibits directed fishing, retention is allowed up to an amount calculated with the MRA. The MRA table 10 at 50 CFR part 679, shows retainable proportions of incidental species relative to species open to directed fishing. Vessel operators calculate the MRA through three basic steps. First, they identify and calculate the round weight of the basis (or target) species on board. Next, they identify the appropriate fraction from the MRA table, and then multiply that rate against the round weight of the basis species. The calculated maximum amount limits retention of the incidental species. A vessel will typically discard catch of the incidental species in excess of that amount to avoid violation of current regulation. The catcher processor vessel (CP) operator calculates the MRA at any time for the duration of the fishing trip, often referred to as an “instantaneous” calculation. The shoreside catcher vessel (CV) operator calculates the MRA upon returning to port for delivery of retained catch.

A groundfish fishing trip begins when fishing gear is deployed by a vessel and meets any of the regulatory conditions of a fishing trip at § 679.2. By regulation, several conditions end a trip for a CP sectors (based on whichever condition occurs first): 1) NMFS prohibits directed fishing for any species in the Federal reporting area where the vessel is fishing, 2) the vessel offloads, 3) the vessel moves into an area where a directed fishing closure exists, 4) the vessel switches gear, or 5) the weekly reporting period ends. A trip defines the period during which a vessel operator calculates the amount of incidental species retained.

At the time NMFS prohibits directed fishing on a groundfish species, MRAs buffer the amount of non-directed species catch occurring in the directed fishery. Incidental catch of a species may still occur when that species is open to directed fishing, because more than one species may be open to directed fishing at any given point in time.

For several incidental/basis species combinations, the use of low MRA rates may reduce the incentive for topping off that would occur in the absence of this tool. In these cases, the MRAs represent the expected catch of an incidental species absent deliberate action by the vessel operator to maximize that incidental catch. The requirement to not exceed MRA proportion at any time during a trip, limits the vessel operators’ ability to maximize catch. This restriction is used to limit total catch of species low in TAC amount (relative to the species caught in the directed fisheries), at greater risk of being caught in excess of the overfishing level, and high value. Some rockfish species and sablefish meet these criteria in the GOA.

Current regulations establish a relatively high MRA for particular species. For example, a generous rate of 35 percent for arrowtooth flounder as an incidental species is applied to open groundfish targets as a basis species (Appendix 1). Experience of NMFS managers demonstrated that the several directed trawl fisheries incurred high arrowtooth flounder incidental catch rates. The higher MRA allows for increased indirect targeting on arrowtooth flounder. For other species where restricting catch to an incidental rate is not a consideration, regulations establish a default MRA rate of 20 percent.

5.3 Description of Alternatives

The alternatives establish MRAs for incidental catch species relative to arrowtooth flounder as a basis species over a range of values. Alternative 1 maintains the existing MRA percentages, which are zero with the exception of pollock (5 percent), Pacific cod (5 percent), other species (20 percent), and forage fish (2 percent). Alternative 2 would increase the MRA percentages for most species to 20 percent, while Alternative 3 would increase the MRA percentages for most species at a more modest level compared to Alternative 2. Table 1 lists the MRA percentages under each of the alternatives for comparison. Note that the basis species under each alternative is arrowtooth flounder and that the MRA percentages for each incidentally catch species are found in the columns.

NMFS' Catch Accounting System (CAS) calculates single targets based on all retained catch and may include several species opened to directed fishing that are caught together. Targets are assigned to CPs on the basis of a week and to CVs on the basis of a landing. These data generally represent aggregate catch of multiple landing reports from CVs and weekly production or observer reports from CPs where arrowtooth flounder is calculated as the most prevalent species retained.

5.3.1 Alternative 1: Status Quo (No Action)

Under this alternative the MRAs of incidental catch of groundfish relative to arrowtooth flounder as a basis species are unchanged. These amounts are listed under Alternative 1 in Table 1 and in Table 10 to 50 CFR part 679 (Appendix 1). Under this alternative only pollock, Pacific cod, and species which comprise the "other species" complex (squid, shark, octopus, and sculpins) and forage fish may be retained relative to arrowtooth flounder as a basis species. All other incidental species must be discarded relative to retained arrowtooth flounder.

Many incidental species assigned an MRA of zero are caught in conjunction with arrowtooth flounder when the incidental species are open to directed fishing. Under those conditions retention of the incidental species is not restricted. Retention of incidental species is restricted only when the fishery is closed to directed fishing due to TAC considerations (e.g., skates are closed all year to directed fishing) or when limited by a trawl halibut mortality closure.

5.3.2 Alternative 2: Set MRAs as per Industry Proposal

Under this alternative, MRAs for incidental catch of groundfish relative to arrowtooth flounder as a basis species would be established at the proposed levels (see Table 1). The intent of the proposal is to reduce regulatory discards and increase utilization of marketable fish. The proposal could also reduce violations of the MRA restrictions incurred when vessels are unable to completely discard incidentally caught species that are currently restricted to zero retention. Compared to Alternative 1, the MRAs for pollock, Pacific cod, "other species", and forage fish are unchanged. The remaining basis species are increased. Sablefish and rockfish are raised to 1 percent and 5 percent respectively. Flatfish species, skates, and Atka mackerel are increased from 0 to 20 percent.

Because pollock and Pacific cod are fully utilized in directed fisheries and are forage species for the endangered Steller sea lion, it is the intent of the alternative to limit incidental catch so as not to increase the potential for topping off. The increases in the MRA for rockfish and sablefish are based on estimates of the incidental catch rates (Tables 3 through 6) and are proposed to reduce regulatory discards of marketable fish without providing an incentive to top off.

5.3.3 Alternative 3: Set MRAs near Recent High Incidental Catch Levels

Under Alternative 3, MRAs for incidental catch relative to arrowtooth flounder as a basis species would be set near recent high annual incidental catch rates of species landed in conjunction with arrowtooth flounder (see Table 1).

Like Alternatives 1 and 2, under Alternative 3, the MRAs are unchanged from status quo for pollock, Pacific cod, other species, and forage fish to respond to concerns expressed in the industry proposal. Alternative 3 MRAs are unchanged for rockfish and sablefish compared to Alternative 2 and lower for deep-water flatfish, rex sole, flathead sole, shallow-water flatfish, Atka mackerel, and skates. The rates for deep-water flatfish, rex sole, flathead sole and shallow-water flatfish were derived from Tables 3 through 6. The highest rate for an individual specie or species group across the years was identified and rounded up to the nearest 5 percent.

The intent of this alternative is to 1) reduce regulatory discards and improve the utilization of groundfish incidentally taken in the arrowtooth flounder directed fishery, 2) prevent an increase in groundfish catch in the arrowtooth flounder fishery substantially beyond recent incidental catch levels, and 3) continue to keep MRAs for important Stellar sea lion prey species (pollock, Pacific cod, and Atka mackerel) at low levels.

5.4 Description of the GOA Arrowtooth Flounder Fishery

Arrowtooth flounder (*Atheresthes stomias*) range from central California to the eastern Bering Sea and are currently the most abundant groundfish species in the Gulf of Alaska. Prior to 1990, flatfish catch in the GOA was reported as an aggregate of all flatfish species. The principal flatfish targets at that time were rock sole (shallow-water flatfish), rex sole, and Dover sole (deep-water flatfish). Substantial amounts of arrowtooth flounder and other flatfish were discarded at sea as undesired species, size, or sex. Total GOA catch of arrowtooth, including targeted and incidental catch, has ranged between 13,000 mt (1998) and 27,645 mt (2006) mt in 2006. The catch of arrowtooth flounder in the targeted fishery has increased from 6,767 mt in 1997 to 15,344 mt in 2006. The vast majority of arrowtooth flounder catch is taken by trawl gear. Catches of arrowtooth flounder in recent years have approached established TACs in some areas. In order to reduce potential discards of arrowtooth, the Council raised the TAC for arrowtooth flounder from 5,000 mt to 8,000 mt in the Western GOA in 2001 and from 25,000 mt to 30,000 mt in the Central GOA in 2007.

The MRA regulations identify basis and incidental species retention on different timeframes and species compositions than the CAS target calculations; therefore, Tables 3 through 6 do not show

catch associated only with arrowtooth flounder as a basis species. Vessels may retain several species open to directed fishing. If several species are open to directed fishing and are landed together (which is generally the case), the predominate retained species is assigned as the target. The display of annual retained and discarded species within the arrowtooth flounder target therefore does not reflect the MRA proportions, but rather, a dynamic of multiple ‘target’ species caught together in the trawl groundfish fishery. These tables provide all the species that are caught in conjunction with arrowtooth flounder. The information was calculated from discard rates observed from at-sea sampling and industry reported retained catch. Table 2 includes discarded and retained GOA arrowtooth flounder from 1997 to 2006. Most apparent in Table 2 is the decline in percent discarded, which declined from a high of 84 percent in 1998 to a low of 36 percent in 2005. Tables 3 through 6 present incidental catch of groundfish in the arrowtooth flounder fishery.

The proportion of arrowtooth flounder that is retained has increased in recent years indicating that the species has become a legitimate target. Catch data in Table 7 indicate the retention status of arrowtooth flounder for two recent years, 2005 and 2006, and for the year when the change in MRA status was implemented, 1997. For the entire groundfish fleet, recent discards in the arrowtooth flounder target are less than 20 percent compared to over 30 percent in 1997. The absolute amount of arrowtooth flounder has increased as well.

In the GOA the arrowtooth flounder fishery are almost exclusively prosecuted by CPs and CVs using bottom trawl gear. Although arrowtooth flounder is open to other vessel categories and gear types, very small amounts of arrowtooth flounder are harvested by other gear types and then as incidental catch. Table 8 shows that within the trawl catch about 56 percent are taken by CVs and 44 percent by CPs.

The limited amount of arrowtooth flounder taken by hook-and-line gear is incidental to the sablefish and Pacific cod fisheries. Within CVs, the hook-and-line fishery for sablefish takes the vast majority. Additional amounts are taken in the CP hook-and-line fishery for sablefish and their fishery for Pacific cod. Within the CP hook-and-line fisheries, about half of the arrowtooth flounder caught was retained. Within the CV hook-and-line fishery, all arrowtooth flounder was discarded.

Trawl-caught arrowtooth flounder is distributed among several targets and tends to group based on processing mode. Figure 1 shows that CPs take arrowtooth flounder predominately in the arrowtooth flounder target, followed by rex sole, flathead sole, and small amounts in the rockfish target. CVs likewise take the majority of their arrowtooth flounder in the arrowtooth flounder target followed by pollock, shallow-water flatfish (the catch is predominately rock sole), rockfish, and Pacific cod.

In general, the majority of the harvest of arrowtooth flounder occurs during the March to May time frame (see Figure 2). Depending upon the availability of the halibut PSC allowance for the deep-water complex vessels may also target arrowtooth flounder in October and November. Catch patterns for the Central GOA show that most of the directed fishing for arrowtooth flounder occurs in the spring following the closure of the Pacific cod A season. In the Western GOA, most of the directed fishing for arrowtooth flounder occurs during the spring by CP vessels coming from the Bering Sea after the rock sole and yellowfin sole closures. Following the seasonal closures of these fisheries, vessels target arrowtooth flounder until the second

seasonal halibut bycatch cap for the deep-water complex is reached, which is most often in May. Generally, after the arrowtooth flounder fishery closes, these vessels shift to several different targets; notably flatfish species in the shallow-water complex, rockfish, and pollock and Pacific cod as the seasonal allowances of these targets become available. The implementation of the Rockfish Pilot Program in the Central GOA in 2007 and potentially Amendment 80 may result shifts in effort and timing of the arrowtooth flounder fishery.

Historically arrowtooth flounder has had limited value compared too many other groundfish species in the GOA. Prior to 1994, the species was used as a very low valued basis species to target species closed to directed fishing. For example arrowtooth flounder was retained on CVs as a basis for retaining sablefish. Once the sablefish and arrowtooth flounder were delivered to a plant, the arrowtooth flounder was either sent to a meal plant or discarded. In 1994, all MRAs relative to arrowtooth flounder were set at 0 percent. In 1997, the MRAs for Pacific cod and pollock were set at 5 percent and for forage fish at 2 percent. The 1994 and 1997 actions shared the intent of improving the use of halibut bycatch mortality relative to the other trawl groundfish targets and slowing the catch rate of sablefish. The 1997 rule also intended to increase utilization of pollock and Pacific cod in the directed arrowtooth flounder fishery. At that time, there were concerns that fishing vessel operators would target arrowtooth flounder to increase the retainable amounts of valuable species closed to directed fishing and increase bycatch amounts of Pacific halibut. Increased halibut bycatch rates could result reaching halibut bycatch limits before the TACs established for other trawl target fisheries were harvested.

Since 1997, markets for arrowtooth flounder have gradually been developing. Although arrowtooth flounder market prices fluctuate widely, this species now supports a viable target fishery. The principle buyers of arrowtooth flounder are China and Japan. The primary product for arrowtooth flounder is the frill, which is the fleshy fins used for engawa, a type of sushi. Engawa, normally a premium sushi made from halibut or Greenland turbot, is more affordable using arrowtooth flounder. Unlike most other flatfish, the frill of the arrowtooth flounder is sufficiently sized to cover the rice on sushi, which is critical in sushi markets. The primary market for arrowtooth flounder engawa is Japan. A secondary product for arrowtooth flounder is fillets. A large portion of the arrowtooth flounder fillets shipped to China are processed and exported to the U.S. markets as inexpensive flounder. Some portion arrowtooth flounder processed in Japan is also sold as fillets in the Japanese market. Recently, some arrowtooth flounder fillets have shown up in European markets.

Average gross earnings per round metric ton of retained arrowtooth flounder received by both shoreside processors and CP vessels increased from 2001 to 2005 are displayed in Table 9. For shoreside processors, these estimates include the product value of catch from both Federal and State of Alaska fisheries. For CPs, they include only the product value from catch counted against Federal TACs. These price approximations are based on a combination of weekly production reports, Alaska Commercial Operators Annual Reports (COARs), and blend and other catch accounting data, and tend to support anecdotal observations from the Alaska Groundfish Data Bank that prices for this species have increased in recent years. Table 15 provides annual wholesale price per metric ton of GOA Atka mackerel, flatfish, flathead sole, POP, rockfish, and sablefish from 2001 to 2005 for the trawl CP sector.

5.5 Expected Effects of the Alternatives

This section provides an analysis of three alternatives: 1) Status Quo/No Action, 2) industry proposed MRAs, and 3) MRAs near recent high incidental catch levels. Assessing the effects of the alternatives involves some degree of speculation. In general, the effects arise from the actions of individual participants in the fisheries under the incentives created by the different alternatives. Predicting these individual actions and their effects is constrained by the novelty of the program under consideration and incomplete information concerning the fisheries, including the absence of complete economic information and well-tested models that predict behavior under different institutional structures. In addition, exogenous factors, such as stock fluctuations, market dynamics, and macro condition in the global economy, will influence the responses of the participants under each of the alternatives.

5.5.1 Alternative 1: Status Quo/No Action

Under Alternative 1, the MRAs would not be revised for groundfish species in the GOA directed arrowtooth flounder fishery. Maintaining the existing MRAs would continue to require trawl CVs and CPs to discard any groundfish species that have an MRA of zero percent if those fisheries were closed to directed fishing. For a more detailed description of status quo, see the background section of the Regulatory Impact Review (Section 5.3). Overall, the status quo alternative is likely to result in the continuation of existing practices and patterns. However, in the future, if the price of arrowtooth flounder continues to increase, the economic incentive for trawl vessels to target arrowtooth flounder will likely increase thus potentially resulting in higher regulatory discards of valuable bycatch species.

Frequently, vessels targeting arrowtooth flounder also harvest lesser amounts of shallow and deep-water flatfish or other species, which are open to directed fishing. These flatfish amounts allow for the lawful retention of small amounts of groundfish species harvested with arrowtooth flounder that might otherwise require thorough sorting of catch and at-sea discards. To date, NOAA Fisheries Enforcement has not observed any significant amounts of PSC groundfish species retained and landed concurrent with directed arrowtooth flounder landings, and this has not been a drain on enforcement resources.

5.5.2 Alternatives 2 and 3

Impacts to the Arrowtooth Flounder Fishery

Under Alternatives 2 and 3, trawl sectors targeting GOA arrowtooth flounder could retain a higher percentage of the incidental caught groundfish that are closed to directed fishing. Table 16 provides closure dates for GOA shallow-water and deep-water complex for 2005 and 2006. As noted in Table 16, many of the species are open to directed fishing concurrently with arrowtooth flounder. For purposes of apportioning halibut PSC in the GOA, groundfish species are divided into the deep-water and shallow-water complex. Arrowtooth flounder is grouped with deep-water flatfish, rex sole, sablefish, and rockfish in the deep-water species complex. When the deep-

water complex is open to directed fishing, arrowtooth flounder, rex sole, and deep-water flatfish can be retained at rates unrestricted by the MRA tables. Likewise, when the shallow-water complex is open concurrently with the deep-water complex, flathead sole and shallow-water flatfish can be retained without proportional restrictions. However, as shown in Table 16, it is possible the shallow-water complex can close to directed fishing when seasonal halibut PSC allocation for that complex is fully utilized while the deep-water complex is still open for directed fishing. In addition, many of the rockfish species (thornyhead, shortraker, and rougheye) are closed to directed fishing on January 1 due to the insufficient TAC. As a result, these species are placed on bycatch status, and could be retained up to the MRA percentage under Alternatives 2 and 3 in the arrowtooth flounder target fishery.

Given the general trend in the price for arrowtooth flounder, increasing the MRAs for incidentally caught species could provide enough of an economic incentive for the some trawl vessels to target arrowtooth flounder more often. The economic characteristics of the trawl CP and CV sectors vary widely. It is possible that some participants will take into consideration the economic value of the bycatch species in the directed arrowtooth flounder fishery to estimate the benefit of targeting arrowtooth flounder. Under Alternative 1, those groundfish species with an MRA set at zero that are closed to directed fishing must be discarded, regardless of the value of the species. Under Alternatives 2 and 3, high valued bycatch species that are closed to directed fishing could be retained up to the MRA, thus potentially increasing the vessel's net revenue while targeting arrowtooth flounder. In those cases were a vessel is on the margin for targeting arrowtooth flounder under Alternative 1, increasing the MRAs for arrowtooth flounder under Alternatives 2 and 3 could be enough of economic incentive to induce entry into the arrowtooth flounder target fishery.

In designing the alternatives for this action, it was the intent to keep several species at or near status quo levels to reduce the economic incentive for vessels to use arrowtooth flounder fishery to increase catch of pollock, Pacific cod, sablefish, aggregated rockfish, and forage fish. In considering the status of bycatch fisheries for purposes of determining economic value of targeting arrowtooth flounder, the bycatch fisheries considered will be limited to deep-water flatfish, rex sole, flathead sole, shallow-water flatfish, Atka mackerel, skates, and to a lesser extent aggregated rockfish and sablefish. Despite the increased success of the arrowtooth flounder fishery in recent years, many of the MRA species still command a higher price in the market (see Table 15). As a result, under Alternatives 2 and 3, increased retention of some MRA species is likely over status quo, and, in some cases, there is the potential for increased catch of some MRA species.

Although the proposed MRAs are designed to accommodate current catch rates and not encourage top off fishing in the case of some species (e.g., Pacific cod, pollock, rockfish and sablefish) establishing an MRA for those species does provide a maximum amount above zero that could act as a target and encourage incidental catch amounts higher than previous years. The TAC could be exceeded probably by relatively small amounts. However catch would likely be well below the OFL. The following year the incidental catch account would be adjusted to accommodate the increased catch associated with the MRA. An increased incidental catch account decreases the directed fishing allowance for those species for which a directed fishery exists. As noted in the background section of this proposed action, most of the incidental species are assigned MRAs greater than zero relative to the basis species. Few of the relatively high

MRAs are fished to their maximum amount or have large impacts on the directed fishery, if one exists, for the incidental species.

Halibut PSC Effects

Trawl groundfish fishing is highly influenced by halibut bycatch mortality management in the GOA. Groundfish fisheries are divided into two general categories; the deep-water complex and the shallow-water complex⁴. Each complex is allocated a portion of a 2,000 mt halibut mortality limit which is allocated across five seasons. The final season in October is not apportioned between the two complexes (Table 17).

With the development of the arrowtooth flounder fishery, the amount of halibut mortality attributed to the arrowtooth flounder fishery has increased dramatically. Table 11 shows the halibut mortality in the arrowtooth flounder fishery has increased from 78 mt in 1997 to 616 mt in 2006. This increase reduces the halibut mortality available to support the other directed groundfish fisheries in the trawl deep-water complex (deep-water flatfish, rex sole, and rockfish) from January 20 to October 1 and to all groundfish fisheries after October 1.

Harvest of the deep-water flatfish TAC has historically been limited, in part, because of halibut PSC constraints. The TAC set for deep-water flatfish includes Dover sole, Greenland turbot, and deep sea sole. Historically, the TAC for deep-water flatfish has been relatively small. The Western Gulf TAC was set at only 330 mt, as of December 2005, and the Central Gulf TAC was 3,340 mt. During the 2004 fishing year, only 7 mt (2 percent) of the Western Gulf deep-water flatfish TAC, and 614 mt (21 percent) of the Central Gulf deep-water flatfish TAC, were harvested. Deep-water flatfish harvests in 2005 were reported to be at similar levels.

Rex sole and arrowtooth flounder are other flatfish species that are prized by the trawl sectors and harvested under the deep-water species complex allotment. These flatfish species are also constrained by halibut mortality limits. During the years 2004-2005, less than 50 percent of the TAC was harvested for each of these species in the Western, Central, and West Yakutat areas of the GOA (the only exception is that 67 percent of the Central Gulf arrowtooth flounder TAC was taken in 2005). Although the arrowtooth flounder market is currently showing some signs of market saturation through weakening prices, the markets in the future are likely to accept additional deliveries of these species if they can be harvested. The primary constraint on their harvest is the availability of halibut PSC.

A specific amount of halibut PSC mortality is apportioned to the deep-water species complex (Table 18). The deep-water species complex allotment is set for the entire GOA. The allotment is not divided by sub-area in the GOA. Therefore when the halibut mortality allotment for the deep-water complex is taken, all the deep-water fisheries in the GOA are closed to directed fishing.

⁴ At §679.21 (d)(3)(iii) these fisheries are defined as follows: (A) Shallow-water species fishery. Fishing with trawl gear during any weekly reporting period that results in a retained aggregate catch of pollock, Pacific cod, shallow-water flatfish, flathead sole, Atka mackerel, and "other species" that is greater than the retained aggregate amount of other GOA groundfish species or species group. (B) Deep-water species fishery. Fishing with trawl gear during any weekly reporting period that results in a retained catch of groundfish and is not a shallow-water species fishery as defined under paragraph (d)(3)(iii)(A) of this section.

Information on deep-water closures that occurred as a result of halibut mortality in the GOA is provided in Table 12. The information provided in that table shows that halibut bycatch has traditionally caused fisheries in this group to close. Recall that these closures are Gulf-wide, so the closures apply to the Western, Central, West Yakutat, and Eastern Areas of the GOA.

Increasing the MRAs for the directed arrowtooth flounder fishery under Alternatives 2 and 3 would likely increase the demand for halibut PSC that is apportioned to the deep-water species complex. Given that halibut PSC is not apportioned between trawl sectors, the pace of fishing could increase as trawl vessels race to harvest more of the species in the deep-water complex fisheries before halibut PSC is fully utilized.

Trawl vessels that participate in GOA fisheries are expected to continue to harvest deep-water complex species that allow them to generate the greatest profits within the PSC halibut bycatch limits. Other flatfish targets (shallow-water flatfish, rex sole, flathead sole, deep-water flatfish) are far less abundant in the GOA than arrowtooth. Vessels targeting these flatfish species receive higher prices per mt but lower catches per fishing day compared to arrowtooth. What arrowtooth flounder lacks in value it makes up for in volume. An average shoreside trawl vessel can fill its fish holds in a single day. Now that markets exist for arrowtooth flounder it becomes an economic decision for the trawl fleet to decide whether to use the halibut PSC allowance to support a low volume, high value fishery like rex sole or a high volume, low value fishery like arrowtooth.

Regulatory Discards

With the exception of pollock, Pacific cod, other species, and forage fish, under Alternative 1, all incidental caught groundfish species closed to directed fishing that are caught while targeting arrowtooth flounder have to be immediately discarded. Under Alternative 2 and 3, incidental caught groundfish species that are closed to directed fishing while targeting arrowtooth flounder could be retained up to the MRA, thus potentially reducing regulatory discards. Given recent actions by the Council in the BSAI to reduce discards, reduction of regulatory discards would likely improve the retention rate for trawlers in the GOA.

Table 13 shows total catch and discard rates in the 2006 GOA trawl arrowtooth flounder target by processing component. It displays the annual general mix of species and the associated discard rates associated with the trawl arrowtooth flounder target.

The multiple species ‘arrowtooth flounder target’ consists of higher-valued species (all often open to directed fishing) that are retained at a high rate. Table 14 indicates a distinction between processing modes in the types of species retained within the broad arrowtooth flounder target. Figure 1 likewise indicates distinctions between CPs and CVs in targets where arrowtooth flounder is caught.

Table 14 shows the amount of retained catch by processing component by species in descending order. It indicates the preference of retained catch in the more generalized arrowtooth flounder/flatfish target.

The top three species retained by CPs after arrowtooth flounder are rex sole, Pacific cod, and flathead sole. Trawl CPs are predominately part of the offshore component which is very restricted in its ability to directed fish for Pacific cod. Pacific cod in this case could be retained relative to arrowtooth flounder, rex sole, and flathead sole. Some trawl CPs are part of the inshore component. The inshore component has more opportunity to target Pacific cod. When the Pacific cod fishery is open, those vessels could retain it in conjunction with arrowtooth flounder without the MRA restriction.

The top three species retained by CVs after arrowtooth flounder are flathead sole, pollock, and shallow-water flatfish (likely rock sole). Often during the year all three of these species are open concurrently to directed fishing.

Reviewing total and retained catch in the trawl arrowtooth flounder targets reveals that arrowtooth flounder is often a directed fishery and it can be taken in combination with other targets or species open to directed fishing. Depending on the actual incidental catch rates and status of the fisheries, some of the incidental catch of species closed to directed fishing associated with an arrowtooth flounder target may be retained against other species open to directed fishing and taken within the arrowtooth flounder target. Conversely, some species may be discarded because of the limited (or zero) MRAs that are calculated against arrowtooth flounder. To the extent that this occurs, more species may be retained as a result of the proposed changes to the MRAs, thus reducing regulatory discards.

Under the 2006 final groundfish harvest specifications, all skates were closed to directed fishing because most of the available quotas were necessary as incidental catch. Not enough skate TAC was available to conduct a directed fishery. Table 13 shows discard rates for skates ranging from 72 percent for ‘other’ skates, 49 percent for longnose skates, and 21 percent for big skates. Although a direct relationship between skate discards and the arrowtooth flounder fishery cannot be succinctly demonstrated in the CAS, it may be that some of the discards are associated with arrowtooth flounder MRA restrictions. An increase of the MRA as proposed from 0 percent to 20 percent will allow increased retention of a species currently discarded relative to arrowtooth flounder.

Enforcement Effects

For the CP fleet, compliance with MRAs is enforced during at-sea and dockside boardings, as well as by analysis of Weekly Production Reports and other documents. For the CV fleet, MRAs are enforced at landings. Processors are prohibited from possessing or processing groundfish taken or retained in violation of Magnuson-Stevens Act regulations, including MRA overages. Timely notification of NOAA Fisheries Enforcement relieves this unlawful possession burden. During 2006, the Office of Enforcement processed approximately 70 groundfish “overage” violations. In recent years, the overall numbers of groundfish MRA violations has been declining. About a third of these annual MRA violations occur during the arrowtooth flounder/flatfish directed fisheries, during March-June. Within this arrowtooth flounder/flatfish target, overage species were generally evenly divided between Pacific cod, sablefish and skates.

Under Alternatives 2 or 3, NOAA Fisheries Enforcement does not anticipate any significant increase in the amount of MRA overages. For Pacific cod, no change is anticipated from status quo. For product quality reasons, processors place timely landing requirements upon vessels

targeting arrowtooth flounder. It is believed these time limitations, combined with the low MRA amount, would limit the profitability and desirability of topping off activities for sablefish. Under Alternatives 2 and 3, the MRA for skates would increase from zero to either 20% or 5%. Based upon current observations of the fleet, it is not anticipated that overages of skates would increase under either alternative. Qualitatively, there is an expectation the incidence of skate MRA overages would decrease under Alternative 2 or 3.

NOAA Fisheries Enforcement does not foresee any significant negative impact upon their resources by this action, and this action may reduce the numbers of administrative violations requiring enforcement response. NOAA Fisheries Enforcement supports the reduction of regulatory discards anticipated by this action.

5.6 Effects on Net Benefits to the Nation

Net benefits to the Nation would likely increase under Alternatives 2 and 3 relative to Alternative 1. The difference in net benefits to the Nation between Alternatives 2 and 3 are small, with Alternative 2 having slightly more benefits to the Nation compared to Alternative 3 due to higher MRAs in Alternative 2. Under Alternative 1, the current management of GOA arrowtooth flounder would continue, thus the net benefits to the Nation would likely remain close to their current level under this alternative. Contributing to the increase in net benefits to the Nation under Alternatives 2 and 3 is the increase in retention of incidental caught GOA groundfish species up to the MRA, which under Alternative 1 require discarding. The increased retention of incidental catch in the arrowtooth flounder directed fishery would likely increase the net value to the trawl sectors thus increasing producer surplus.

6 Initial Regulatory Flexibility Analysis (IRFA)

6.1 Introduction

This Initial Regulatory Flexibility Analysis (IRFA) evaluates the impacts on small entities of alternatives designed to revise the maximum retainable amounts (MRAs) of groundfish that may be retained in the arrowtooth flounder fishery in the Gulf of Alaska management area of the EEZ off Alaska.

This IRFA addresses the statutory requirements of the Regulatory Flexibility Act (RFA) of 1980, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C. 601-612).

6.2 The Purpose of an IFRA

The RFA, first enacted in 1980, was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business,

unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the SBREFA. Among other things, the new law amended the RFA to allow judicial review of an agency's compliance with the RFA. The 1996 amendments also updated the requirements for a final regulatory flexibility analysis, including a description of the steps an agency must take to minimize the significant economic impact on small entities. Finally, the 1996 amendments expanded the authority of the Chief Counsel for Advocacy of the Small Business Administration (SBA) to file amicus briefs in court proceedings involving an agency's violation of the RFA.

In determining the scope, or "universe," of the entities to be considered in an IRFA, NMFS generally includes only those entities that can reasonably be expected to be directly regulated by the proposed action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group, gear type, geographic area), that segment would be considered the universe for the purpose of this analysis. NMFS interprets the intent of the RFA to address negative economic impacts, not beneficial impacts, and thus such a focus exists in analyses that are designed to address RFA compliance.

Data on cost structure, affiliation, and operational procedures and strategies in the fishing sectors subject to the proposed regulatory action are insufficient, at present, to permit preparation of a "factual basis" upon which to certify that the preferred alternative does not have the potential to result in "significant adverse impacts on a substantial number of small entities" (as those terms are defined under RFA).

Because, based on all available information, it is not possible to certify this outcome, should the proposed action be adopted, this IRFA has been prepared for Secretarial review.

6.3 What is required in an IFRA?

Under 5 U.S.C., Section 603(b) of the RFA, each IRFA is required to contain the following elements:

- A description of the reasons why action by the agency is being considered;
- A succinct statement of the objectives of, and the legal basis for, the proposed rule;
- A description and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate);
- A description of the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities

that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;

- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;

- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as

1. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
2. The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;
3. The use of performance rather than design standards;
4. An exemption from coverage of the rule, or any part thereof, for such small entities.

6.4 What is a small entity?

The RFA recognizes and defines three kinds of small entities: (1) small businesses, (2) small non-profit organizations, and (3) small government jurisdictions.

Small business. Section 601(3) of the RFA defines a small business as having the same meaning as “small business concern,” which is defined under Section 3 of the Small Business Act. “Small business” or “small business concern” includes any firm that is independently owned and operated and not dominant in its field of operation. The SBA has further defined a “small business concern” as one “organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor...A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the firm is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture.”

The SBA has established size criteria for all major industry sectors in the United States, including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of \$4.0 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the \$4.0 million criterion for fish harvesting operations. Finally, a wholesale business servicing the fishing industry is a small business if it employs 100 or fewer

persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide.

The SBA has established “principles of affiliation” to determine whether a business concern is “independently owned and operated.” In general, business concerns are affiliates of each other when one concern controls or has the power to control the other or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether an affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern’s size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) a person is an affiliate of a concern if the person owns or controls, or has the power to control 50 percent or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock; or (2) if two or more persons each owns, controls or has the power to control less than 50 percent of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors, or general partners, controls the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as a joint venture if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

Small organizations. The RFA defines “small organizations” as any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions. The RFA defines “small governmental jurisdictions” as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of fewer than 50,000.

6.5 Need for and Objectives of the Proposed Rule

In 1994, as a result of Council concern that directed fishing for arrowtooth flounder for the purpose of topping off with other, higher-valued species would result in unacceptably high halibut bycatch rates, NMFS prohibited the use of arrowtooth flounder as a basis for calculating retainable amounts of groundfish species closed to directed fishing. During this period, there were limited markets for arrowtooth flounder, so the species was discarded or rendered into meal. However, the halibut bycatch amounts associated with the arrowtooth flounder were credited against the overall halibut bycatch limits available to other fisheries. Increased halibut bycatch rates could result in reaching halibut bycatch limits before the TACs established for other trawl target fisheries were harvested.

In December 1995, NMFS initiated a change to the GOA arrowtooth flounder MRB [MRAs were referred to as MRBs at the time of this rule] after hearing testimony that a limited fishery for GOA arrowtooth flounder exists and that this species should be allowed as a basis species for the retention of pollock and Pacific cod. The change to the GOA arrowtooth flounder MRAs was implemented in 1997, keeping most directed fisheries at zero percent to prevent vessels from topping off, but setting the MRAs for pollock and Pacific cod at 5 percent and for aggregated forage fish was set at 2 percent.

Since 1997, markets for GOA arrowtooth flounder have been developed and this species now supports a viable target fishery. In October 2005, the Council received a proposal from some members of the GOA trawl industry to revise the MRAs for groundfish in the arrowtooth flounder fishery in the GOA. Provided in the proposal from the industry was the suggested problem statement for this action:

“When the MRAs were set in regulations, the Council chose to set incidental catch allowances at zero for a wide group of species to prevent vessels from using arrowtooth as a basis species for retention since there was no market for arrowtooth flounder. Arrowtooth flounder is now a viable target fishery and the MRAs for these other species need to be changed to remove the requirement for regulatory discards. The Council has had two recent amendments to the GOA FMP [fishery management plan]. The first amendment removed skates from the Other Species TAC [total allowable catch] group, and the second amendment uses a different method to set the Other Species TAC. In the first case, the Council did not change the MRA for skates for the arrowtooth target fishery but instead left the MRA at 0%, in the second case for other species the Council revised the MRA from 0% to 20%. As the table below shows [see Table 1 under Alternative 1] there are presently a suite of species that have MRAs of 0% which creates a conservation concern since any incidental catch of these species must be discarded at sea.”

Council and NMFS staff have summarized the industry’s proposal as the following strawman problem statement:

When the MRAs for the directed GOA arrowtooth flounder fishery were set in regulations in 1994, the Council chose to set incidental catch allowances at zero for a wide group of species to prevent vessels from using arrowtooth flounder as a basis species for retention since there was no market for arrowtooth flounder. Arrowtooth flounder is now a viable target fishery and efforts to improve retention of many groundfish species utilized by the trawl sectors are restrained by MRAs in the directed GOA arrowtooth flounder fishery. MRAs are a widely used groundfish management tool to reduce targeting on a species and slow harvest rates as an allocation

approach. However, sometimes species managed with MRAs must be discarded, even though economic incentives exist to retain that species. Thus, the MRA forces regulatory discards of some species that might otherwise be retained without undermining the intent of the MRA as a tool to reduce overall harvest rates. This regulatory amendment would evaluate raising the MRAs for some species in the directed GOA arrowtooth flounder fishery to provide increased opportunity for retention of species harvested by the trawl sectors and reduce overall discards in this sector, while not subjecting incidentally caught species to increased allocation concerns.

6.6 Objectives of and Legal Basis for the Proposed Action

The objective for this proposal is to provide additional opportunities for members of the trawl CP and CV sector to retain an increased amount of selected groundfish species while not subjecting incidentally caught species to increased conservation concerns. This objective is encompassed by authorities contained in the Magnuson-Stevens Act. Under the Magnuson-Stevens Act, the United States has exclusive management authority over all living marine resources found within its EEZ. The management of marine fishery resources is vested in the Secretary of Commerce (Secretary), with advice from the Regional Fishery Management Councils. The groundfish fisheries in the EEZ off Alaska are managed under the Fishery Management Plan (FMP) for Groundfish of the Bering Sea and Aleutian Islands (BSAI) and GOA.

Statutory authority for measures designed to reduce bycatch is specifically addressed in Sec. 600.350 of the Magnuson-Stevens Act. That section establishes National Standard 9--Bycatch, which directs the Councils to minimize bycatch or minimize mortality when bycatch cannot be avoided.

Regulations for the GOA MRAs and how they are calculated are found at 50 CFR 679.20 parts (e) and (f) and in Table 10 to Part 679.

The Magnuson-Stevens Act is the legal umbrella under which the groundfish fisheries of the BSAI and GOA are managed. In the Alaska region, the North Pacific Fishery Management Council is responsible for preparing management plans for marine fishery resources requiring conservation and management. NOAA Fisheries, under the U.S. Department of Commerce, is charged with carrying out the Federal mandates with regard to marine fish, once they are approved by the Secretary. NOAA Fisheries Alaska Regional Office and Alaska Fisheries Science Center reviews the management actions recommended by the Council.

6.7 Number and Description of Small Entities Regulated by the Proposed Action

The entities directly regulated by this action are those CPs and CVs that target arrowtooth flounder in the EEZ of the GOA using trawl gear. These are the vessels that comprise the universe of small entities that would be regulated by the proposed action. Some trawl vessels along with fixed gear vessels incidentally catch arrowtooth flounder in other directed fisheries but most of this arrowtooth flounder is subsequently discarded.

At this time, data on the number of trawl vessels that caught or caught and processed less than \$4.0 million ex-vessel value or product value of directed GOA arrowtooth flounder could not be generated in time for initial review. This information and other information necessary to complete the IRFA will be generated and included in the public review draft that is scheduled for review in October 2007.

6.8 Recordkeeping and Reporting Requirements

MRA accounting under the status quo (Alternative 1) is tracked by operators and audited by enforcement through comparison of the weight of processed product on Daily Cumulative Production Logbook (DCPL) reports for both basis and incidental species, and expanding those weight estimates by the published product recovery rates at 50 CFR 679. This review process would not change for Alternatives 2 or 3, and there will be no change to recordkeeping and reporting requirements under either of the proposed action alternatives.

6.9 Description of Significant Alternatives

See Section 2 for a description of the alternatives.

7 Consistency with Applicable Law and Policy

7.1 Magnuson-Stevens Act

National Standards

The Council's overarching mandate to guide it in managing bycatch is National Standard 9 which states, "Conservation and management measures shall, to the extent practicable, A) minimize bycatch, and B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch."

This amendment proposed to increase the MRAs for the directed GOA arrowtooth flounder directed fishery for selected species that are caught mostly by the trawl CV and CP sectors. As a result, the proposed action is in accordance with the Council's mandate under National Standard 9.

Section 303(a)(9) – Fisheries Impact Statement

Section 303(a)(9) of the Magnuson-Stevens Act requires that any plan or amendment include a fishery impact statement which shall assess and describe the likely effects, if any, of the conservation and management measures on a) participants in the fisheries and fishing communities affected by the plan or amendment; b) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants taking into account potential impacts on the participants in the fisheries, as well as participants in adjacent fisheries.

The alternative actions considered in this analysis are described in Chapter 2 of this document. The impacts of these actions on participants in the fisheries and fishing communities are evaluated in the RIR, Chapter 5.

7.2 Marine Mammal Protection Act

The alternatives analyzed in this action are not likely to result in any significant impacts to marine mammals.

7.3 Coastal Zone Management Act

This action is consistent with the Coastal Zone Management Act.

8 References

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- NPFMC, 2006. Stock Assessment and Fishery Evaluation Report (SAFE) for the Groundfish Resources of the Gulf of Alaska. NPFMC, 605 W 4th Avenue, Suite 306, Anchorage.
- Anchorage Fish and Wildlife Field Office. Available from NMFS website: <http://www.fakr.noaa.gov/protectedresources/seabirds.html>

9 Agencies and Individuals Consulted

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Tables

Table 1. Comparison of Maximum Retainable Amounts (Percentages) of Groundfish in the Arrowtooth Flounder Fishery in the Gulf of Alaska under Alternatives 1 through 3.

Incidental Catch Species	Alternative 1 %	Alternative 2 %	Alternative 3 %
Pollock	5	5	5
Pacific cod	5	5	5
Deep-water flatfish	0	20	5
Rex sole	0	20	10
Flathead sole	0	20	15
Shallow-water flatfish	0	20	5
Sablefish	0	1	1
Aggregated rockfish	0	5	5
Atka mackerel	0	20	5
Skates ¹	0	20	10
Other Species ¹	20	20	20
Forage fish	2	2	2

¹For the years 2004 through 2006.

Table 2. Total catch and discards of GOA arrowtooth flounder

Year	Discarded (mt)	Retained (mt)	Total (mt)	Percent discarded
1997	13,442	2,985	16,427	82
1998	10,943	2,057	13,000	84
1999	11,943	4,265	16,208	74
2000	13,044	9,938	22,982	57
2001	13,345	6,619	19,964	77
2002	10,381	10,032	20,413	51
2003	12,890	17,325	30,215	43
2004	6,665	8,660	15,325	44
2005	6,502	11,798	18,300	36
2006	11,617	16,208	27,645	42

Table 3. 2003 Catch of groundfish attributed to the arrowtooth flounder fishery by the NMFS catch accounting system

Groundfish	Discarded (mt)	Retained (mt)	Total (mt)	Percent Retained	Incidental Catch Rate (%)
Arrowtooth flounder	4,338	11,146	15,484	72	
Atka mackerel	3	39	42	93	<1
Deep-water flatfish	136	71	207	34	1
Flathead sole	97	311	408	76	3
Other species ²	197	106	303	35	2
Rockfish ¹	808	260	1,069	24	7
Pacific cod	351	493	844	58	5
Pollock	69	279	348	80	2
Rex sole	62	929	990	94	6
Shallow-water flatfish	19	76	95	80	1
Sablefish	269	76	345	22	2

¹Aggregate catch of all species of rockfish

²In 2003 the "other species" category included skates

Table 4. 2004 Catch of groundfish attributed to the arrowtooth flounder fishery by the NMFS catch accounting system

Groundfish	Discarded (mt)	Retained (mt)	Total (mt)	Percent Retained	Incidental Catch Rate
Arrowtooth flounder	1,367	4,614	5,981	77	
Atka mackerel	2	0	2	0	<1 %
Deep-water flatfish	12	47	59	20	0 %
Flathead sole	85	702	788	89	13 %
Other species	17	5	22	21	0 %
Rockfish ¹	21	64	86	25	1 %
Pacific cod	128	353	481	73	8 %
Pollock	11	158	170	93	3 %
Rex sole	21	206	227	91	4 %
Skates	36	334	370	90	6 %
Shallow-water flatfish	17	253	270	94	5%
Sablefish	29	22	52	43	1 %

¹Aggregate catch of all species of rockfish

Table 5. 2005 Catch of groundfish attributed to the arrowtooth flounder fishery by the NMFS catch accounting system

Groundfish	Discarded (mt)	Retained (mt)	Total (mt)	Percent Retained	Incidental Catch Rate
Arrowtooth flounder	2,062	8,653	10,716	81	
Atka mackerel	1	8	9	88	<1 %
Deep-water flatfish	89	41	130	32	1 %
Flathead sole	153	1,077	1,230	88	11 %
Other species	121	14	135	10	1 %
Rockfish ¹	114	112	226	50	2 %
Pacific cod	163	453	616	74	6 %
Pollock	15	277	292	95	3 %
Rex sole	73	660	733	90	7 %
Skates	200	551	750	73	7 %
Shallow-water flatfish	10	96	106	90	1 %
Sablefish	37	64	102	63	1 %

¹Aggregate catch of all species of rockfish

Table 6. 2006 Catch of groundfish attributed to the arrowtooth flounder fishery by the NMFS catch accounting system

Groundfish	Discarded (mt)	Retained (mt)	Total (mt)	Percent Retained	Incidental Catch Rate
Arrowtooth flounder	2,668	12,676	15,353	83	
Atka mackerel	1	1	2	60	<1 %
Deep-water flatfish	79	59	138	42	1 %
Flathead sole	61	1,200	1,260	95	8 %
Other species	138	41	179	23	1 %
Rockfish ¹	331	213	544	39	4 %
Pacific cod	156	778	934	83	6 %
Pollock	84	671	756	89	5 %
Rex sole	43	1,060	1,103	96	7 %
Skates	184	166	350	48	2 %
Shallow-water flatfish	35	504	539	93	4 %
Sablefish	102	74	176	42	1 %

¹Aggregate catch of all species of rockfish

Table 7. Gulf of Alaska catch and discards of arrowtooth flounder in the arrowtooth flounder target by year

Year	Discarded (mt)	Retained (mt)	Total (mt)	% Discarded
1997	2,201	4,566	6,767	33
2005	2,063	8,665	10,728	19
2006	2,668	12,676	15,344	17

Table 8. 2006 Gulf of Alaska arrowtooth flounder catch by gear type and processing component

Gear Type	CPs (mt)	% of Total	CVs (mt)	% of Total	Total Catch (mt)
Non-pelagic trawl	11,873	48	13,098	52	24,971
Pelagic trawl	0	0	2,176	100	2,176
Trawl total	11,873	44	15,274	56	27,147
Hook-and-line	204	43	272	57	477
Grand Total	12,077	44	15,546	56	27,624

Note: Jig and pot gear had combined reported catches of less than 20 mt.

Table 9. Wholesale price per metric ton of arrowtooth flounder for the CPs and shoreside processors from 2001 to 2005

Year	CP (\$ per round metric ton)	Shoreside processor (\$ per round metric ton)
2001	259	98
2002	342	-
2003	344	-
2004	751	342
2005	717	556

Notes: A dash indicates that data were not available or were withheld to preserve confidentiality.
Data Source: weekly processor reports, commercial operator's annual report, Blend data 2000 to 2002, catch accounting system 2003 to 2005 for estimates of retained catch. National Marine Fisheries Service

Table 10. Frequency of occurrence of Atka mackerel in Steller sea lion scat 1999-2005 in the GOA

Region/Season	Number of scats analyzed	Percentage of samples containing Atka mackerel
Eastern GOA		
Summer	38	0
Central GOA		
Summer	85	1.18
Winter	204	1.96
Western GOA		
Summer	184	21.20
Winter	42	0

(NMML unpublished data, April 2007)

Table 11. Gulf of Alaska trawl halibut bycatch mortality by target species for 2006 and 2007

Target Species	1997 halibut mortality (mt)	2006 halibut mortality (mt)
Deep-water flatfish	228	-
Rockfish	261	186
Arrowtooth flounder	78	616
Rex sole	299	116
Pacific cod	604	347
Shallow flafish	451	632
Flathead sole	164	24
Other species	23	-
Pollock	5	82
Total	2,112	2,003

Table 12. Deep-water complex trawl closures triggered by halibut bycatch over the past 5 years

Year	Closure 1	Closure 2	Closure 3	Closure 4	Closure 5	Closure 6	Closure 7
2001	25-May	23-Jul	21-Oct				
2002	24-May	2-Aug	13-Oct	10-Nov			
2003	16-May	15-Oct					
2004	19-Mar	26-Apr	25-Jul	1-Oct			
2005	23-Mar	8-Apr	3-May	24-Jul	4-Sep	10-Sep	1-Oct

Source: NMFS

Table 13. GOA trawl arrowtooth flounder target retention and discards by species and processing component for 2006

Species	CVs		CPs		Both Processing Components	
	Total catch (mt)	Discard rate (%)	Total catch (mt)	Discard rate (%)	Total catch (mt)	Discard rate (%)
Arrowtooth flounder	9,235	11	6,108	28	21,452	12
Flathead sole	937	3	324	10	1,584	4
Rex sole	385	2	718	5	1,821	2
Pacific cod	343	7	591	22	1,525	10
Pollock	664	9	91	27	847	10
Shallow-water flatfish	484	3	55	37	594	6
Pacific ocean perch	44	69	174	86	392	46
'Other' species	119	66	59	100	238	58
Sablefish	30	44	146	61	323	32
Big skate	157	21			157	21
Northern rockfish	12	56	129	79	270	40
Deep-water flatfish	43	6	95	81	233	34
Longnose skate	74	46	56	100	187	49
Pelagic shelf rockfish	26	72	103	6	233	11
'Other' skate	40	98	18	87	77	72
Thornyhead rockfish	5	21	16	10	36	7
Rougheyeye rockfish	17	49	-	-	17	49
Shortraker rockfish	8	8	3	4	14	5
'Other' rockfish	3	78	1	100	6	64
Atka mackerel	<1	79	2	39	4	21

Table 14. GOA trawl gear retained catch by processing component and species in the arrowtooth flounder target for 2006

CPs		CVs	
Species	Retained Catch (mt)	Species	Retained Catch (mt)
Arrowtooth flounder	4,417	Arrowtooth flounder	8,258
Rex sole	685	Flathead sole	909
Pacific cod	459	Pollock	604
Flathead sole	291	Shallow-water flatfish (rock sole)	469
Pelagic shelf rockfish	97	Rex sole	375
Pollock	67	Pacific cod	319
Sablefish	57	Big Skate	123
Shallow-water flatfish (primarily rock sole)	35	Deep-water flatfish	41
Northern rockfish	27	Other skate	41
Pacific ocean perch	24	Longnose skate	40
Deep-water flatfish	18	Sablefish	17
Thornyhead rockfish	14	Pacific ocean perch	13
Shorthead	3	Rougheye	8
Unidentified Skate	2	Shorthead	8
Atka mackerel	1	Pelagic shelf rockfish	7
		Northern rockfish	5
		Thornyhead rockfish	4
		Unidentified Skate	1
		Other rockfish	1

Table 15. Wholesale price per metric ton of GOA groundfish for the CPs from 2001 to 2005 (\$ per round metric ton)

Year	Atka mackerel	Flatfish	Flathead sole	POP	Rockfish	Sablefish
2001	1,170	2,055	887	378	685	4,509
2002	1,243	1,838	868	601	856	4,213
2003	850	1,957	872	665	975	4,948
2004	370	1,866	1,296	821	931	4,944
2005	558	2,230	1,397	1,372	1,117	5,117

Data Source: Weekly processor reports, National Marine Fisheries Service

Table 16. GOA trawl halibut closures by species complex for 2005 and 2006

2005 CLOSURES			2006 CLOSURES				
	Open	Closed		Open	Closed	Note	
Shallow-water complex	20-Jan	19-Aug	Shallow-water complex	20-Jan	23-Feb		
	1-Sep	4-Sep		27-Feb	10-Jun		
	1-Oct	1-Oct		1-Jul	1-Sep	midnight	
Deep-water complex				6-Sep	6-Sep	12 hr	
	20-Jan	23-Mar		20-Sep	20-Sep	12 hr	
	1-Apr	8-Apr		25-Sep	25-Sep	12 hr	
	24-Apr	3-May		1-Oct	8-Oct		
	5-Jul	24-Jul	Deep-water complex	20-Jan	27-Apr		
	1-Sep	4-Sep			1-Jul	5-Sep	
	8-Sep	10-Sep			1-Oct	8-Oct	
	1-Oct	1-Oct	Combined				

Table 17. 2006 apportionment of Pacific halibut PSC trawl limits between the trawl deep-water species fishery and shallow-water species fishery

Season	Shallow-water (mt)	Deep-water (mt)	Total (mt)
January 20–April 1	450	100	550
April 1–July 1	100	300	400
July 1–September 1	200	400	600
September 1–October 1	150	Any remainder	150
Subtotal January 20–October 1	900	800	1,700
October 1–December 31			300
Total			2,000

Table 18. GOA halibut bycatch allotments in 2005 for the deep-water species complex and dates closure notices were issued

Season Start	Season End	Amount of Halibut Allocation	Amount of Halibut Mortality
January 20	April 1	100mt	152mt
April 1	July 5	300mt	255mt
July 5	September 1	400mt	349mt
September 1	October 1	Any remainder	38mt
October 1	December 31	300mt*	

Sources: NOAA Fisheries website listings of 2005 Information Bulletins and Final 2005 GOA apportionments.

*No apportionment is made between the shallow-water and deep-water complex during the 5th season (October 1 – December 31).

Figures

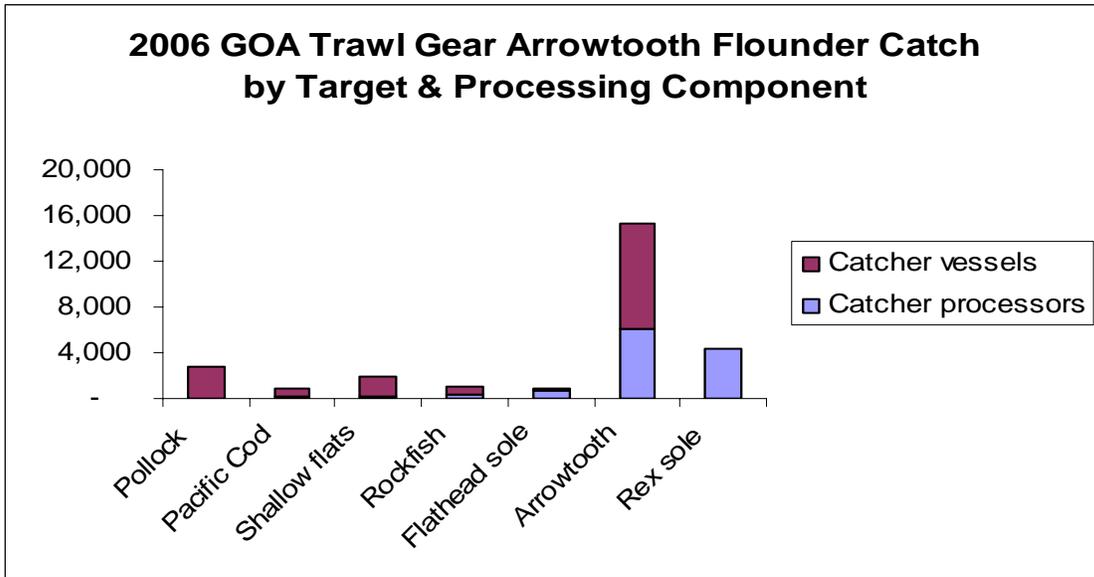


Figure 1. GOA trawl gear arrowtooth flounder catch by target and processing component for 2006

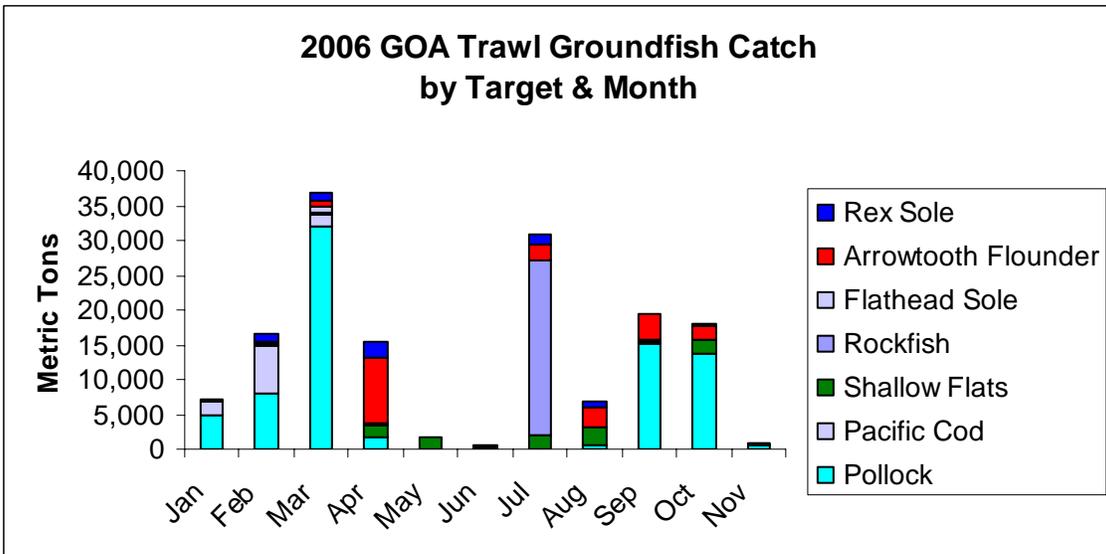


Figure 2. GOA trawl groundfish catch by target and month for 2006

APPENDIX 1: Table 10 to 50 CFR Part 679